

THE DEVELOPMENT AND INITIAL VALIDATION OF
A MEASURE OF SMALL GROUP LEADERSHIP SELF-EFFICACY

A Thesis

by

OLABISI AINA ASENUGA

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Approved by:

Chair of Committee,	Winfred Arthur, Jr.
Committee Members,	Christopher M. Berry
	David J. Martin
Head of Department,	Paul J. Wellman

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ABSTRACT

Small group leadership self-efficacy is conceptualized as an individual's degree of confidence in his/her ability to successfully assume a leadership role in a small group. The task specificity of self-efficacy and the conceptualization of leadership as context bound informs the need for a small group leadership self-efficacy measure that is a superior operationalization of the specified construct than extant measures of leadership self-efficacy in the context of small group leadership. Consequently, the purposes of this study were: (a) to develop a psychometrically sound self-report measure of small group leadership self-efficacy and establish its underlying structure through factor analytic procedures, and (b) to present preliminary validity evidence for the measure.

In order to develop a representative item pool for the posited small group leadership self-efficacy dimensions, relevant theory was reviewed and extant literature was surveyed, with special attention to factor analytic studies. Using the data of 568 undergraduate students collected online, Study 1 investigated the factor structure of the initial 101-item measure. This resulted in the refinement and reduction of the initial measure to a 32-item measure, consisting of 5 dimensions. However, in Study 2, factor analyzing data collected from 296 undergraduate students who completed only the 32 items retained in Study 1 and the item-to-category sorts of 7 independent judges resulted in the confirmation of a second-order small group leadership self-efficacy factor structure with 2 dimensions (initiating structure and consideration) consisting of 23 items that best captured the content domain of the construct. The final 23-item measure

of small group leadership self-efficacy was embedded into a nomological network where its relationships with four variables of interest was tested and results revealed that previous small group leadership experience, valence of previous small group leadership experience, and subjective vitality are correlates of small group leadership self-efficacy.

The results of the present work have both theoretical and practical implications. An outcome of this study is a psychometrically sound measure of small group leadership self-efficacy which has the potential for high utility in both applied and scientific settings. These implications as well as possible directions for future research are identified and discussed.

DEDICATION

This is for you, Kayode Atoba, for your unwavering love and commitment.

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INTRODUCTION AND LITERATURE REVIEW

“The only man I know who behaves sensibly is my tailor; he takes my measurements anew each time he sees me. The rest go on with their old measurements and expect me to fit them.”

George Bernard Shaw (Irish Playwright)

One of the most studied aspects of group dynamics is leadership, and within this area self-efficacy has enjoyed great attention. Self-efficacy, an individual’s belief in his/her capacity to muster the cognitive, motivational, and behavioral resources required to perform in a given situation (Bandura, 1997), has been identified in social-cognitive theory as “the most powerful self-regulatory mechanism” that affects behaviors (Bobbio & Manganelli, 2009, p. 3). It influences the initiation, intensity, and persistence of behavior (Bandura, 1986). The conceptualization of self-efficacy as inherently task-specific, the embedded nature of leadership based on context, the recognition that leadership qualitatively varies as a function of group size (Alderfer & Klein, 1978; Johnson, 2000), and the growing trend in the creation of work groups and teams as the cornerstone in the operation of many organizations (Harris & Sherblom, 2011; Mahar & Mahar, 2004) necessitates the study of leadership self-efficacy within small groups. Yet there are currently no measures that directly measure this construct.

The centrality of measurement to the advancement of science cannot be over-emphasized; measurement plays an integrative role in understanding science conceptually (Smith, Wiser, Anderson, & Krajcik, 2006) and the quality of measurement influences the quality of science. Therefore, the development of a measure that enriches

our conceptual understanding of small group leadership self-efficacy as a construct while adequately differentiating individuals who are high on this variable from those who are low is imperative not only for scientific inquiry but also for the prediction of leadership effectiveness, and developmental purposes such as leadership training.

Although consensus on a universal definition of leadership has not been reached (Winston & Patterson, 2006; Northouse, 2013; Yukl, 2010), a common thread that various conceptualizations of leadership share is the context specificity of leadership (Johnson, 2000). That is, not all leadership is the same as implementation of leadership functions appear to be dependent on the situation in which leadership occurs. Other common themes that characterize leadership definitions are social influence, voluntary followership, and objective and strategy setting. Integrating these common threads, leadership can be defined as the “process whereby an individual influences a group of individuals to achieve a common goal” (Northouse, 2013, p. 5). Because leadership qualitatively varies as a function of the size of the group being led, the focus of this study, unlike previous approaches, is on *small group* leadership as a specific type or form of leadership.

Although existing work has applied leadership self-efficacy to management, driving change in organizations, and college leadership domains (Anderson, Krajewski, Goffin, & Jackson, 2008; Johnson, 2000; Paglis & Green, 2002), it has not done so by utilizing a small group leadership context, which may include a work, volunteer, or family group. What appears to be missing and would be useful to both researchers and practitioners is empirical research on small group leadership self-efficacy as a new

construct that is theoretically related to but distinct from the broader conceptualization of leadership self-efficacy.

This new construct, small group leadership self-efficacy, in addition to capturing leadership functions in the above mentioned contexts (i.e., management and college leadership contexts), will also be instrumental in small group leadership contexts in general. Small group leadership self-efficacy is considered to represent an individual's confidence in his/her ability to successfully assume a leadership role in a small group. Although the term *group* is used, the concept of small group leadership is equally applicable to *teams* as well based on the premise that a team is a specific, goal-oriented type of group (Karriker, 2005) characterized by task interdependence among its members (Arthur, Edwards, Bell, Villado, & Bennett, 2005; Arthur, Glaze, Bhupatkar, Villado, Bennett, & Rowe, 2012; Northouse, 2013). Consequently, the present study seeks to develop a small group leadership self-efficacy measure and provide preliminary validity evidence for it. This measure has the potential to (a) enrich our conceptual understanding of small group leadership self-efficacy as a construct, (b) be used as a predictor of leadership effectiveness, and (c) be used for training and development purposes.

Leadership Self-Efficacy: Theoretical Background

Given the paucity of research in the leadership self-efficacy domain, it is unclear whether a broad and inclusive definition exists (Anderson et al., 2008). However, McCormick (2001) defined leadership self-efficacy as "one's self-perceived capability to perform the cognitive and behavioral functions necessary to regulate group process in

relation to goal achievement” (p. 30). It is an individual’s confident belief that he or she has the knowledge, skill, and ability to lead others effectively (Anderson et al., 2008; Hannah, Avolio, Luthans, & Harms, 2008; Paglis & Green, 2002). Leadership self-efficacy deals with an individual’s self-efficacy beliefs to successfully assume a leadership role in a given team or group. It is critical to the leadership process because it affects the goals a leader selects, and the development and skillful execution of functional leadership strategies.

Within the leadership literature, existing studies on leadership self-efficacy are relatively few (e.g., Anderson et al., 2008; Bobbio & Manganelli, 2009; Hendricks & Payne, 2007; Ng, Ang, & Chan, 2008; Paglis & Green, 2002). As would be expected, the most popular subject of interest in past research has been how leadership self-efficacy relates to leader effectiveness (Stajkovic & Luthans, 1998), with a few studies on the development of a measure of leadership self-efficacy. This study provides a review of the theoretical background for both leadership self-efficacy and small group leadership self-efficacy and discusses a number of empirical studies focusing on the development of a measure of leadership self-efficacy.

Social Cognitive Theory

Social cognitive theory posits that an individual’s behavior is determined by a reciprocal relationship between the individual’s characteristics (i.e., cognitive thought processes), his/her behavior, and the environment where the behavior takes place (Bandura, 1986, 1991, 1997, 2012). To fully understand leadership processes, in addition

to the individual's leadership behaviors and the situational demands, the individual's self-efficacy for the leadership task must be considered as well.

To establish agency and ownership over their area of responsibility and to fully engage themselves, leaders must be efficacious in a number of ways. For example, they must believe they can generate leadership solutions, motivate themselves to engage in leadership challenges, enact appropriate behaviors, and take advantage of the opportunities available in their environment to ensure leadership success (Hannah et al., 2008). With low efficacy, difficult endeavors may be seen as insurmountable challenges—if one's beliefs in his/her capabilities fall short of those necessary to meet the demands of the situation, then any investments in such pursuits are likely to be seen as futile. However, with sufficient efficacy, goal seekers tend to perceive a greater likelihood of success, thus providing a likely return on investments of time and effort (Schmidt & DeShon, 2010). Leadership self-efficacy is, therefore, critical because it affects the goals a leader selects, his/her motivation, the development of functional leadership strategies, and the skillful execution of those strategies (McCormick, 2001).

One of the most relevant studies on the measurement of leadership self-efficacy was conducted by Paglis and Green (2002) who operationalized managers' leadership self-efficacy as the motivation to promote and practice change-oriented leadership. In an attempt to differentiate leadership self-efficacy from traditional management functions, Paglis and Green developed a self-efficacy measure unique to leadership. The measure consists of three dimensions that pertain to the leader behaviors of (a) setting a direction for the work unit, (b) gaining followers' commitment to change goals, and (c)

overcoming obstacles to change. Paglis and Green showed that leadership self-efficacy was associated with increased attempts to lead. Although laudable as one of the first studies to propose and validate a leadership self-efficacy measure, a limitation was its narrow focus on leadership as driving change within organizations. Little attention was paid to the function of directing a group on a specific task which is the day-to-day behavior of a leader. The measure has also been criticized for having a framework that was too constrained and for having a rationally-derived taxonomy based on a small sample of prior research (Anderson et al., 2008).

Anderson et al. (2008) sought to develop a more comprehensive leadership self-efficacy measure by analyzing qualitative data obtained from interviews with 44 subject matter experts. Subsequent dimensional analysis resulted in a taxonomic structure of leadership self-efficacy made up of 18 dimensions that were posited to capture the full range of leadership activities. Examples of these leadership self-efficacy dimensions are *change*, *challenge*, *mentor*, *self discipline*, *motivate*, and *project credibility*. Despite its going beyond previous research by defining a more specific and comprehensive taxonomy of leadership self-efficacy, a shortcoming of Anderson et al. was the failure to present any criterion-related validity evidence for the measure. In addition, as addressed by the authors, its 18 dimensions contain too many factors to be practically useful.

Finally, Bobbio and Manganelli (2009) developed a multidimensional leadership self-efficacy measure consisting of six dimensions (e.g., starting and leading change processes in groups, choosing effective followers/delegating responsibilities, and gaining

consensus of group members). The measure showed positive correlations with the amount of past and present leadership experiences and motivation to lead.

Based on the preceding review, there is compelling evidence that leadership self-efficacy measures have been developed with a focus on macro-leadership. Although these measures appear inclusive of different leadership contexts by assuming a “one size fits all” approach, they fail to acknowledge the changes that occur in the effectiveness of leadership styles and behaviors as a function of the size of the group that is being led. Given this limitation in the measurement of leadership self-efficacy, there is a clear need for a focus on small group leadership self-efficacy that addresses this concern or limitation.

Small Group Leadership Self-Efficacy

To presume that organizations are inherently large is erroneous; in fact most are small enough to be considered a small group. As of 1997, the mean number of individuals employed by businesses in the U.S. was just 22, while the median was only four (Axtell, 2001) after excluding self-employed individuals. “Recent estimates conclude that group-based work methods exist in nearly 70% of U.S. firms” (Lowry, Roberts, Romano, & Cheney, 2006, p. 632). Hence, many typical organizations have more in common with small groups than one would expect (Larson, 2010) because the direct sphere of influence the first-in-command has usually entails a rather small group. Moreover, small groups are the cornerstones of many aspects of organizational behavior, operating at all levels and playing major roles in the informal and formal interactions in

organizations (Harris & Nelson, 2008). Consequently, it becomes pertinent to develop measures that best capture the dynamics within small groups, as well as large groups.

To scientifically study anything, we must first operationally define the construct of interest, and then use measurement rules to quantify it. Although groups have been said to vary in size from three or four to the mass meeting of thousands (Rice, 1999), this study adopts the definition that a group is “a number of persons who communicate with each other often over a span of time, and who are few enough so that each person is able to communicate with all the others” (Homan, 1993, p. 1). Individuals in a group are mutually aware of one another and cognizant of their interdependence (Larson, 2010). Their interdependence is embedded in a shared purpose, objective, or goal they are trying to accomplish. It arises from the behavioral requirements of the task(s) they must perform in pursuit of that goal, that is, how they must interact if they are to reach it (Larson, 2010).

A small group is one in which the members communicate directly and are aware of each other as individuals, even if that awareness is limited only to a recognition of the other’s presence (Bales, 1976; Cooley, 1983). Because a small group permits a reasonable one-on-one interaction of each member with every other member, it is possible for each member both to influence, and to be influenced, by every other member of the group (Larson, 2010). Small groups may be formal or informal (Harris & Sherblom, 2011). Within the small group literature are studies of families, informal work groups, Boy Scout troops, research teams, airplane crews, college student groups

recruited for an experiment, classroom discussion groups, and surgical teams, to mention a few.

Throughout the range of the literature on the subject, the maximum numeric size that a group can attain and still retain the characteristics of a small group varies with the nature of the group, its task, the length of time it has existed, and its membership (Verba, 1961). A small group must consist of two or more individuals, and it must not contain too many members to the extent of impeding continuous and close personal relationships (Rice, 1999).

Addressing the small group size issue further, the maximum member limit a group can attain for it to remain a small group cannot be declared without caution as assigning such a maximum limit number can be misleading. To illustrate, assume that 25 is the maximum number of a small group. This could be the size of an elementary school class where students receive personalized attention from their teacher and thus, in this scenario, it can be concluded that this group of 25 is small because the teacher or leader is aware and knows every student or member is his/her class. However, using the number 25 in another context, for example, in a context where interdependent workflow¹ is expected, the same number may be viewed as too large for the close personal relationship earlier operationalized as a distinctive feature of a small group to exist.

¹ Team workflow represents the paths by which work or information flows through the team in order to allow the team to complete the task (Arthur et al., 2005). According to Tesluk, Mathieu, Zaccaro, and Marks (1997), intensive interdependence represents a workflow pattern where members must diagnose, problem solve, and/or collaborate as a team in order to accomplish the team's task.

Granted, beyond a specific size, regular one-on-one interaction with everyone else in a group becomes prohibitively time consuming (Larson, 2010). Of primary importance is not the assertion of a specific maximum limit for a small group but rather the acknowledgement that the maximum size of a small group, as previously mentioned, is determined by the nature of the group, its task, the length of time it has existed, and its membership (Verba, 1961). A PsycINFO search of the empirical studies published in the journal of *Small Group Research* in 2008-2012 revealed an average group size of 5.13 for the 38 studies that reported a specific group size; for the 41 samples that reported a size range, the average group size for the lower boundary was 3.8 and the upper boundary was 10.54. Therefore, consistent with Larson (2010), it can be concluded that the bulk of the small group research literature concentrates on groups with a half dozen or fewer members (Larson, 2010).

As previously noted, small group leadership self-efficacy is an individual's degree of confidence in his/her ability to successfully assume a leadership role in a small group. A small group leadership self-efficacy construct is necessary because leadership (from collaborative and democratic to more hierarchical and rigid leadership) varies as a function of group size (Alderfer & Klein, 1978) and groups, the context in which leadership takes place (Northouse, 2013), could range from a small task group to a large group encompassing an entire organization. The efficacy of leadership styles, behaviors, and attributes change as the size of the group changes. For example, adopting a laissez-faire leadership style may be effective in a small group while application of the same style to a large group context where the leader has a wider span of control (i.e., the

number of subordinates controlled directly by a superior) may result in chaos and setbacks. In addition, leadership success in a large group context does not guarantee success in a small group context because efficacy in large group contexts may not necessarily translate into similar levels of efficacy in a small group context; even worse, such leadership self-efficacy may diminish in a small group domain.

Because the number of potential relationships between group members increases rapidly as a group grows larger, the larger group tends to break into subgroups with a more rigid hierarchy of positions (Homan, 1993). As group size increases, it presumably becomes more difficult for the group leader to keep each member of the group in mind as a separate, differentiated person (Homan, 1993). One would expect a leader of a large group to think of members in terms of subgroups of some kind. To illustrate, the dean of a college as a leader deals directly with a small number of persons, the department heads who are his/her “direct reports” in a face-to-face situation. These heads of department in turn pass on information to their direct reports, the faculty members. Because members of the college form a larger group where the communication network is centralized, there are less interpersonal relationships between each member of the college and the dean of the college. Small groups, on the other hand, tend to have open and less centralized communication networks (Hare, 1952); hence, most of the characteristic traits of effective leaders (e.g., effective communication, interpersonal skills) are expected to be more critical within smaller groups.

Small groups are a “microcosm” of the larger organization (Slater, 1966). They provide a link between the “micro-system” in which the individual is present and the

“macro-system” that forms the organization (Golembiewski, 1965, p. 113). Moreover, most of the proposals for bringing about organizational change are implemented through small numbers of workers in teams (Huse & Cummings, 1985). And concerning functions, small group leaders often serve the functions of pace setter and coordinator for both task and socio-emotional behavior. Of importance to a small group is the display of behaviors that conform to the group norms and regular interpersonal relationships of members (see Latham, 1987).

Leader-Member Exchange Theory

What behaviors constitute leadership? Graen and Uhl-Bien (1995) argue that building strong relationships with followers constitutes effective leadership. Leader-member exchange (LMX) theory clearly represents an operationalization of a relationship-based approach to leadership. The fundamental idea of the theory is that effective leadership processes occur when a leader is able to develop relationships with his/her members and thus gain access to the benefits—including bases for incremental influence (Katz & Kahn, 1978)—that are necessary for effective leadership as a result of these relationships (Graen & Uhl-Bien, 1991). To the extent that the leader has a positive, high quality relationship with each group member, it should be easier for the leader to gain member cooperation as members will do what the leader asks because they like the leader and want to maintain their good relationship with him/her (Larson, 2010). LMX often goes beyond the formal employment contract, with leaders showing influence and support and giving the members greater autonomy and responsibility (Hogg, Martin, Epitropaki, Mankad, Svensson, & Weeden, 2005).

LMX theory posits that leaders form different dyadic exchange relationships with different members (Sparrowe & Liden, 1997). These relationships range from those that are based on mutual respect for the capabilities of the other, the anticipation of deepening reciprocal trust with the other (Graen & Wakabayashi, 1994), to those that are simply based on the terms of the formal employment contract between leader and member. LMX theory underscores that effective leadership is contingent on effective leader-member exchanges (Northouse, 2013). When a leader develops high-quality exchanges with all of his/her group members rather than just a few, this results in positive group outcomes (Atwater & Carmeli, 2009; Graen & Uhl-Bien, 1995; Liden, Wayne, & Stilwell, 1993).

It is important to note that a leader's perceived efficacy is essential not only for infrequent action teams or influencing the entire organization as a whole but also for influencing each member of the team at the individual level. Perceived confidence in developing these dyadic leader-member relationships are not captured in extant leadership self-efficacy measures. Hence, a focus on small group leadership self-efficacy incorporates some of the foundational tenets of LMX theory.

In sum, the development of a small group leadership self-efficacy measure in preference to extant leadership self-efficacy measures is necessary for three reasons. First, because self-efficacy is task specific, it is important to establish a criterion domain that is also specific. This is analogous to the argument of some researchers (e.g., Hough, 1998; Kanfer, Ackerman, Murtha, & Goff, 1995; Nyfield, 1994) against the use of global constructs such as the Big Five to predict narrow or specific criteria—but instead,

a greater focus on more specific constructs in organizational behavior and industrial/organizational (I/O) psychology. It is recognized that global constructs predict broad or general behaviors only moderately, whereas narrow or specific constructs predict limited behaviors with a high degree of validity (Hampson, John, & Goldberg, 1986). This phenomenon is known as the bandwidth-fidelity dilemma (Cronbach & Glesser, 1957). A broad measure of leadership self-efficacy applicable to all leadership contexts will have factors that do not apply to the small group leadership context.

Also, leadership, as noted earlier, is defined by the context (Johnson, 2000). That is why the roles, functions, and inputs required of the Brigade commander in the armed forces who is responsible for thousands of troops cannot be the same as those expected of a squad leader in the army with only about a dozen soldiers within his/her command. Therefore, a global leadership self-efficacy measure cannot be applied to these different contexts as it may be measuring what is irrelevant in one (construct contamination) and excluding what is germane in the other (construct deficiency).

Most leadership researchers regard group size as a causal factor that can affect many aspects of group life such as leadership (e.g., Hare, 1952; Hemphill, 1950; Komai, Grossman, & Deters, 2006; Levine & Moreland, 1990; Medalia, 1954; Slater, 1958; Ziller, 1957). It is widely accepted that the human quality of leadership in work groups is intimately bound up with the factor of group size (Hemphill, 1950; Medalia, 1954). Certain behaviors of effective leaders such as leadership by example have been documented to lose their effectiveness as groups become larger (Komai & Grossman, 2009). Because research suggests that people strongly prefer small group membership to

large group membership (Burgess, 1984; McPherson, 1983) it can be expected that individuals' perceptions of their leadership tendencies will vary when group size is manipulated.

Second, consideration, a leadership behavior that refers to the degree to which a leader shows concern and respect for followers, looks out for their welfare, and expresses appreciation and support (Bass & Bass, 2008), is often “forgotten” in the existing leadership self-efficacy measures (Judge, Piccolo, & Ilies, 2004). The mutual trust, friendship, interpersonal relationship, respect, consideration for and leniency toward group members (Kerr, Schreisheim, Murphy, & Stogdill, 1974) characteristic of a considerate leader is even more critical and indispensable at the small group level because fellow-feeling has a lesser impact as the group size increases. Particularly, large groups, such as larger organizational-level groupings, do not offer sufficient personal contact to facilitate or permit personal or direct relationships between the leader and individual members of the group or team.

Third, LMX theory explains leadership as “a system of interdependent dyadic relationships” (Graen & Uhl-Bien, 1995, p. 233). That is, the quality of leader-member relationships reflect the extent to which the leader and member exchange resources and support beyond what is expected based on the formal employment contract (Dansereau, Graen, & Haga, 1975). Because “any measuring device is based on some underlying theory of ‘what's important’ regarding the phenomena under consideration” (Hackman & Oldham, 1975, p. 160) and the small group leadership self-efficacy measure is no exception, LMX theory is, therefore, by definition a small group leadership theory.

Existing leadership self-efficacy measures only capture relationships that are defined by a formal employment contract and not the dyadic personal relationships that exist between leaders and each member of the group.

Sources of Self-Efficacy Beliefs

In his theoretical work on the sources of self-efficacy information, Bandura (1977) explained that individuals consider four types of information in forming self-efficacy beliefs. First and most potent are personal mastery experiences. People naturally reflect back on their past successes and failures in assessing their capability to perform. The second source is vicarious experience, observing a model performing successfully positively affects the observer's judgment of his/her own abilities. The third source, verbal persuasion, refers to receiving positive performance expectations and words of encouragement. That individuals take cues from their physiological state when assessing self-efficacy is the fourth source of efficacy beliefs termed emotional arousal, where high anxiety and stress are sometimes read as signs of impending failure which in turn diminishes efficacy perceptions.

Sashkin (1992) suggested that self-efficacy serves as the foundation for a person's willingness to assume a leadership role. In theory, a person with a strong sense of leadership self-efficacy will be more willing to be a leader than someone with a weak sense of leadership self-efficacy (Johnson, 2000). The degree to which individuals feel efficacious should, therefore, directly predict the degree to which they take on new or enhanced leadership roles to perform these tasks (Hadley, Pittinsky, Sommer, & Zhu, 2009). There is extensive research suggesting that the more confident one is that one can

perform an activity successfully, the more likely it is that one will voluntarily participate in the activity (Maurer, 2001). Consequently, because leadership self-efficacy, resulting from competency perceptions, should predict the willingness to assume leadership roles and subsequent success, it was hypothesized that:

Hypothesis 1: Small group leadership self-efficacy will be related to the willingness to accept a leadership role in a small group.

Previous Experience, Training, and Education

Personal mastery experiences are believed to be one of the most influential sources of efficacy beliefs (Bandura, 1986). A pattern of successes strengthens an individual's belief in his/her capabilities, especially when success is achieved by overcoming obstacles through persistent effort (Wood & Bandura, 1989). Considering oneself to be effective as a leader is a personal characteristic based on previous experience (Bobbio & Manganelli, 2009; Paglis & Green, 2002; Singer 1989; 1991).

Experiences gained as a person with a particular status in a previous group will often transfer into similar group settings. For example, according to birth order theory (Adler, 1927, 1928), first-borns tend to become task-oriented leaders, while later-borns are more relationship-oriented (Dagenais, 1979). McCall, Lombardo, and Morrison (1988) indicate that the thing that leaders gain from experience is a level of self-confidence based on their ability to perform many aspects of leadership. Research findings in a number of studies confirm this linkage (Bobbio & Manganelli, 2009; Chan & Drasgow, 2001; Paglis & Green, 2002).

The role of formal classroom instruction, workshops, and seminars on leadership development has been consistently positive (Astin & Cress, 1998; Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001) where students who participated in leadership classes reported a gain in the theoretical understanding of leadership (Zimmerman-Oster & Burkhardt, 1999). In a dissertation study, Endress (2000) concluded that a leadership education class was a predictor of increased self-efficacy for relational leadership in specific collegiate environments. Consequently, it was posited that:

Hypothesis 2: (a) Previous small group leadership experience and (b) the valence of previous small group leadership experience will be positively related to small group leadership self-efficacy.

Hypothesis 3: Previous leadership education will be positively related to small group leadership self-efficacy.

Subjective Vitality

Subjective vitality refers to the state of feeling alive, alert, and having energy that is perceived to emanate from one's self (Ryan & Deci, 2001). It is considered an aspect of eudaimonic well-being because being vital and energetic is part of what it means to be fully functioning and psychologically well (Ryan & Deci, 2001). It is a trait-like characteristic of individuals that is positively related to self-actualization, well-being, and self-esteem. It is negatively related to depression and anxiety (Ryan & Deci, 2001; Ryan & Frederick, 1997).

Because self-efficacy describes individuals as motivated, resilient to adversity, and able to perform and think clearly under stressful conditions (Bandura, 1997),

subjective vitality is pertinent to the study of leadership self-efficacy. As Bandura states, emotional arousal can be a negative source of efficacy beliefs, where high stress diminishes self-efficacy. Based on the premise that subjective vitality, a relatively stable individual difference, is expected to increase leadership self-efficacy by buffering individuals against anxiety, it was hypothesized that:

Hypothesis 4: Subjective vitality will be positively related to small group leadership self-efficacy.

The rationale in the preceding paragraphs furnishes support for the viability of the small group leadership self-efficacy construct while not precluding that certain skills may transfer successfully from a large group to a small group context and vice-versa. Therefore, developing a new measure of small group leadership self-efficacy and evaluating its preliminary construct-related and criterion-related validity evidence is a meaningful and substantive contribution to the extant literature.

DEVELOPMENT OF A SMALL GROUP LEADERSHIP SELF-EFFICACY MEASURE

“I often say that when you can measure what you are speaking about and express it in numbers, you know something about it”

Lord Kelvin (19th century physicist).

The goal of the present research is to develop a measure of small group leadership self-efficacy that could subsequently be used by researchers and practitioners for scientific inquiry, prediction of leadership effectiveness, leadership training evaluation, and developmental purposes. The objective of this section is to describe the small group leadership self-efficacy item development process consonant with the recommendation of Murphy and Davidshofer (1998) that the first step in the development of a measure is to establish the boundaries around the total set of behaviors believed to represent the construct in question.

In generating the item pool for the measure, several sources were taken into consideration (e.g., Bobbio & Manganelli, 2009; McCormick, Tanguma, & López-Forment, 2002; Paglis & Green, 2002; Yukl, 2010). An initial pool of 101 items were independently developed through behavioral examples within small groups, descriptions of target factors, and previous literature. The items were content reviewed for readability, clarity, appropriateness, scope, and alignment with the proposed context of small groups, thereby, resulting in the establishment of the content validity of the measure. These 101 items are posited to provide a comprehensive representation of the

content domain of small group leadership self-efficacy and establish the boundaries surrounding the construct.

The 101 items were each developed to represent a predetermined component or dimension hypothesized to represent the construct. Each item was fitted into one of five factors that consistently emerged from a detailed review of the extant leadership self-efficacy literature (e.g., Anderson et al., 2008; Bobbio & Manganelli, 2009; Depp, 1993; Hannah et al., 2008; McCormick et al., 2002; Paglis & Green, 2002), relevant leadership theories such as the Hill's model for effective team leadership (see model in Appendix A), McGrath's critical leadership function model (see model in Appendix B), and person-situation theory (e.g., Bass, 1960; Case, 1933; Hackman & Walton, 1986; Northouse, 2013; Westburgh, 1931; Wofford, 1982; Yukl, 2006), and analysis of research in the field of self-efficacy (Bandura, 1977; Gist & Mitchell, 1992) and small group dynamics (Larson, 2010; Levine & Moreland, 1990; Poole & Hollingshead, 2005). These dimensions, capturing self-efficacy beliefs about an individual's capability to carry out the core functions of an effective small group leader, are discussed below.

Context Management

To understand how a small group functions, it is essential to examine the context in which it is embedded (Stohl & Putnam, 2003) and how its relationship with key players in its environment is managed (Ancona & Caldwell, 1992). From a network perspective, group context is viewed as the larger social structure of connections between people, resources, and other collectives in which a group is embedded and to which it is connected (Katz, Lazer, Arrow, & Contractor, 2004). A leader acts as an

arbiter or communication link between his/her group and the group's external environment (Harris & Sherblom, 2011). An efficacious small group leader must negotiate context and action; in *context mediation*, the leader "must collect and form detailed impressions about the environment" (Barge, 1994, p. 12) and in *action mediation*, the leader must remove environmental obstacles through appropriate behaviors (Barge, 1994). To help his/her group succeed, a small group leader should not only focus on internal dynamics, he or she must also take external initiatives. The leader must have the skills and knowledge to actively interact with the external environment by obtaining information and resources relevant to the team, opening up communication channels, advocating for the team, and protecting the team from unreasonable demands from the environment. "Publicize the activities of your group within the organization" is an example item on the context management dimension.

Impression Management

Schneider (1981) conceptualized impression management as the behaviors people direct toward others to create and maintain desired perceptions of themselves. Group leaders use impression management techniques to convince members of their commitment and competence in order to inspire the pursuit of group goals (Gardner & Avolio, 1999). A small group leader should self-monitor his/her expressive behavior and use a variety of impression management strategies to project and maintain desired self-images. This may involve a small group leader engaging in activities that engender team members to like, trust, and have confidence in him/her as their leader, thereby,

augmenting group members' development towards desired end goals. "Act in ways that cause others to like you" is an example item for the impression management dimension.

Monitoring, Diagnosing, and Action-Planning

Small group leaders are efficacious individuals who gather information, plan action, take action, and monitor group progress towards goals (Kane, 1995). For an individual to be successful in a small group leadership role, he or she must monitor the operational processes and the task environment, diagnose individual and group needs, and formulate a solution and/or course of action for an anticipated or extant problem. It is crucial for a small group leader to monitor group performance, monitor implementation of action steps towards problem solving, and identify problems and necessary adjustments in action sequences. Such monitoring activities may represent a crucial determinant of leader performance (Fleishman, Mumford, Zaccaro, Levin, Korotkin, & Hein, 1991) because action plans calling for ongoing adjustment are often required in complex tasks especially when unintended consequences emerge (Jaques, 1977). "Analyze information about your group's performance to determine how things are going" is a sample item for this dimension.

Relationship Management

In order to achieve their common goals, the members of a small group must establish and maintain productive interpersonal relationships (Levine & Moreland, 1990). The regular meetings and frequent member interaction characteristic of small groups behooves the small group leader to set expectations for acceptable interaction patterns (e.g., promoting information exchange) and create a team climate that

encourages behaviors such as mutual performance monitoring and backup behavior (Salas, Sims, & Burke, 2005). The relationship management dimension is about how clearly small group leaders understand group members and how effectively they use that knowledge in building high-performance working relationships. A small group leader should foster communication, build cooperation, facilitate dispute resolution among members, increase morale, and create a psychologically safe environment for members. A sample item is “Build a sense of togetherness among group members.”

Task Management

From a systems perspective, task dynamics—that is a group’s structure, rules, procedure, and individual task-oriented assignments—affect the group’s productivity (Harris & Sherblom, 2011). According to Fielder (1978), one of the factors that define a leader’s effectiveness through optimal group performance is the extent to which task requirements are clearly stated and task-relevant requests are accompanied with procedural directives. An effective leader serves as a catalyst for ensuring that processes that focus the group on the task in order to enhance task completion are in place (Maier, 1967; Northhouse, 2013). Task management is the aspect of small group leadership that encompasses a leader’s capabilities to facilitate the task performance of the group. His/her aim is to get the work done through the group by prioritizing, assigning, and ensuring the completion of tasks. To be effective, a small group leader must facilitate team problem solving through cognitive processes (e.g., shared mental models), coordination processes, and the team’s collective motivation and behaviors (e.g., performance expectations; Salas, Burke, & Stagl, 2004; Zaccaro, Rittman, & Marks,

2001) rather than handing down solutions. A sample item is “Help organize your group’s decision-making process so that good quality decisions are made.”

Inherent in the above discussion is the proposal of a multidimensional small group leadership self-efficacy measure. Using the terminology of Law, Wong, and Mobley (1998), small group leadership self-efficacy may be considered a multidimensional construct that exists at the level of its dimensions. That is, small group leadership self-efficacy may be a general category that underlies several discrete belief structures reflecting confidence in the ability to enact distinct leadership activities in a small group. Furthermore, Bandura (1986) emphasized that an analysis of efficacy perceptions is "best clarified by a microanalytic approach in which self-referent thought is measured in terms of particularized self-percepts of efficacy that may vary across activities and circumstances, rather than in terms of a global disposition assayed by an omnibus test" (p. 396).

Hence, the present study proposes a multidimensional model of small group leadership self-efficacy (see Figure 1) similar to Spearman’s (1904) hierarchical operationalization of intelligence—that a single general intellectual capacity (g) is presumed to underlie or determine a “positive manifold” among lower-level intellectual subtests (s). That is, small group leadership self-efficacy, a “second-order” latent construct, accounts for the associations among the five “first-order” specific leadership efficacies (e.g., task management and relationship management) defined by multiple items. As the common direct cause of the five dimensions, the specific and comprehensive taxonomy of small group leadership self-efficacy is expected to more

accurately represent the full complexity of the construct. Because the small group leadership self-efficacy content domain should cumulatively be indicative of the efficacy in its entirety, it was logical to hypothesize the following:

Hypothesis 5: A second-order factor structure with an overarching factor that explains common variance across five theoretically determined first-order factors will best represent the measurement model underlying the small group leadership self-efficacy measure.

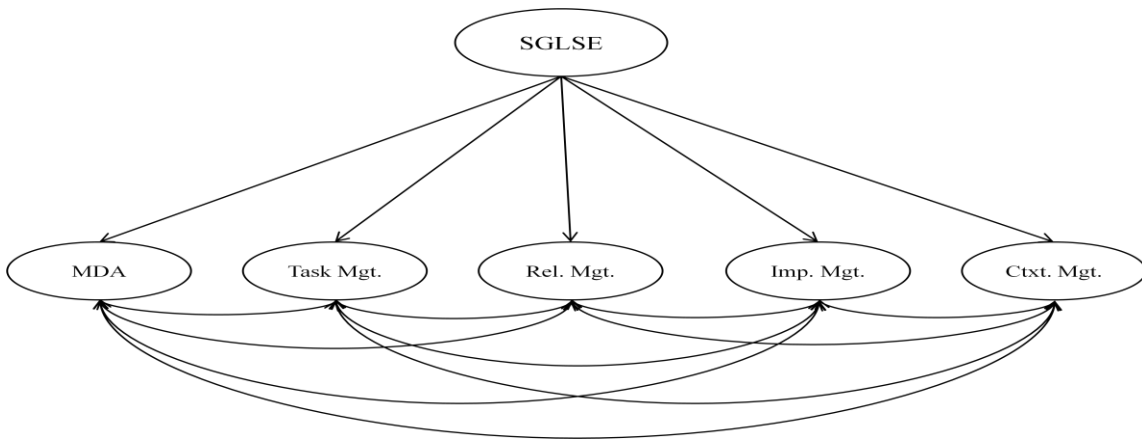


Figure 1. Hypothesized hierarchical model of small group leadership self-efficacy. SGLSE = small group leadership self-efficacy; MDA = monitoring, diagnosing, and action-planning; Task Mgt = task management; Rel. Mgt = relationship management; Imp. Mgt = impression management; Ctxt Mgt = context management.

Figure 1 represents the hypothesized hierarchical small group leadership self-efficacy measurement model. According to Hair, Anderson, Tatham, and Black (1998), a measurement model describes the relationship between the measured manifest variables (observed values obtained from respondents in response to items) and latent constructs (constructs that cannot be measured directly but can be represented or measured by one

or more variables). It determines how well the items measure or describe their specified constructs (Hair et al., 1998). In the present study, 101 items served as the manifest variables and there were two latent factors: (a) the first-order factors (i.e., context management, impression management, monitoring, diagnosing and action planning, relationship management, and task management), and (b) the second-order factor (i.e., small group leadership self-efficacy). This empirical estimate of the variables becomes an objective basis for the small group leadership self-efficacy construct and the proposed factor structure.

Conceptually, the paths or lines with single arrowheads in Figure 1 that point from the second-order latent factor to the first-order factors (e.g., SGLSE → MDA) represent the presumed causal effects of the higher factor on the lower-level factors, that is, the extent to which the factor is reflected in the scores of that indicator. In this sense, a measurement model can be viewed as a structural model of presumed causal effects of latent variables on observed scores. Worthy of note is the fact that these first-order factors are endogenous and thus do not have unanalyzed associations with each other.

When a proposed model fits the data well, some researchers may erroneously infer that the correct model has been specified and proven when it is conceivable that another model may fit the given data set better (Thompson, 2004). Because other models which are theoretically plausible (based on different hypotheses explaining the observed relationships) exist and because it is a suboptimal practice to test only a single, preferred model whose satisfactory fit may be an artifact of having tested too few models

(Thompson, 2004), the theorized multidimensional model was tested against four competing or rival models.

The first competing model consists of a single-factor model, where the refined small group leadership self-efficacy items² will be loaded on a single factor (see Figure 2). Although the single-factor model is usually not theoretically plausible for most research situations (e.g., leadership), its fit statistics can be useful in characterizing the degree of superiority of the proposed multidimensional model (Thompson, 2004).

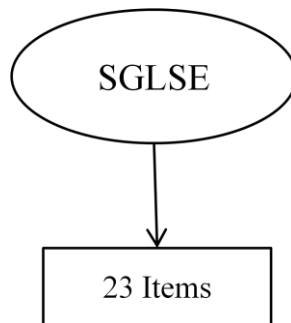


Figure 2. Single-factor model. SGLSE = small group leadership self-efficacy. Items in the square box load on the corresponding latent factor.

The second rival model is a two-factor model consisting of traditional leadership styles identified by the research cadre at the Ohio State University. *Initiating structure* reflects the extent to which the leader defines his/her role and lets group members know what is expected (Stogdill, 1974). Organizing group interaction, assigning tasks to group members, setting and maintaining standards, and evaluating group members' performance (Shartle, 1956) are examples of initiating structure behaviors. The second

² Although 32 items were retained in Study 1, the final refined measure of small group leadership self-efficacy consisted of 23 items.

cluster, *consideration*, represents showing concern for the welfare and well-being of group members, involving them in the decision making process, listening to their opinions and suggestions, and treating them as equals (Shartle, 1956). Both styles serve as behavioral indicators of effective leadership (Stogdill, 1950).

These two constructs, initiating structure and consideration, were considered for the purposes of this study because of their immediate theoretical relevance to small group leadership self-efficacy and because they have established nomological networks (Bass & Bass, 2008; Fleishman & Salter, 1963; Judge et al., 2004; Yukl, 1998) that can help position small group leadership self-efficacy within a broader constellation of constructs. The two-factor model is also a more parsimonious representation of the construct domain space given its fewer number of factors compared to the hypothesized model. This is of particular value given that this study represents an initial examination of the small group leadership self-efficacy construct.

To test the two-factor model (see Figure 3), seven independent judges—doctoral level I/O psychology students familiar with content analysis procedures—were furnished a randomly ordered list of the refined items and definitions of consideration and initiating structure. This procedure has been used frequently in the content analysis (see Holsti, 1969) and substantive validity (i.e., the extent to which individuals perceive a measure to represent a particular construct definition; Anderson & Gerbing, 1991; Holden & Jackson, 1979) literatures. The judges were asked to classify the items into one of the following categories: (a) initiating structure, (b) consideration, (c) both initiating structure and consideration, and (d) neither initiating structure nor consideration. Once

the sorting process was completed, the orthogonal two-factor model, as demonstrated by results of previous factor analyses where it was found that these two behaviors are distinct and independent (Fleishman, 1953), was tested against the best factor solution of the initial validation step.

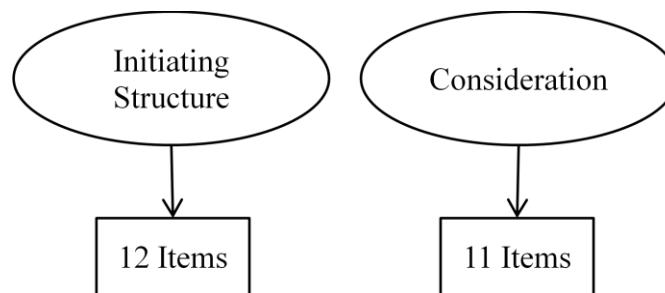


Figure 3. Two-factor model. Items in the square box load on the corresponding latent factor.

Third, because correlated factors in confirmatory factor analyses almost always provide a better fit to the data than uncorrelated factors (Thompson, 2004), and because some researchers have suggested that initiating structure and consideration are, in fact, correlated (e.g., Bass & Bass, 2008; Judge et al., 2004; Lowin, Hrapchak, & Kavanagh, 1969; Weissenberg & Kavanagh, 1972) a second-order model with two correlated first-order factors was tested to investigate the possibility of a latent factor that accounts for the relationship between the initiating structure and consideration factors (see Figure 4).

Fourth, a five-factor model, where the five dimensions—context management; impression management; monitoring, diagnosing, and action planning; relationship management, and task management—are posited to be associated with one another (see Figure 5) was subsequently tested against the best factor solution of the initial validation

step. Because there is no hypothesis that one of these factors causes the other, they are simply assumed to covary, thus, the curved line that connects the ellipses in the figure designates an unanalyzed association.

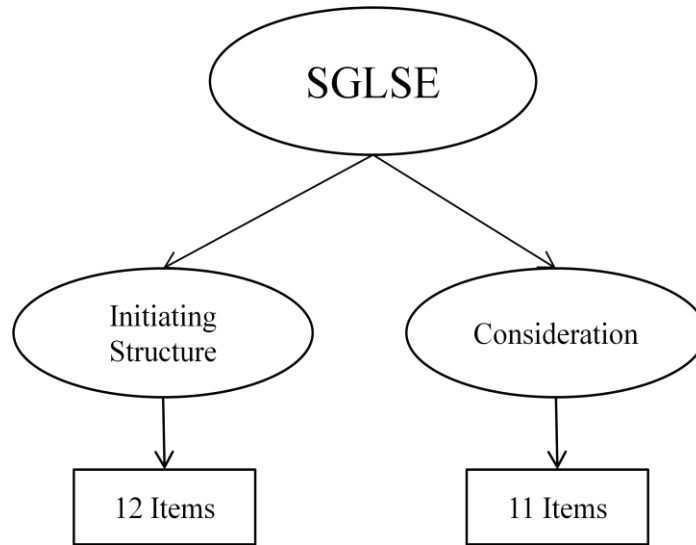


Figure 4. Second-order model with two first-order factors. SGLSE = small group leadership self-efficacy. Items in the square box load on the corresponding latent factor.

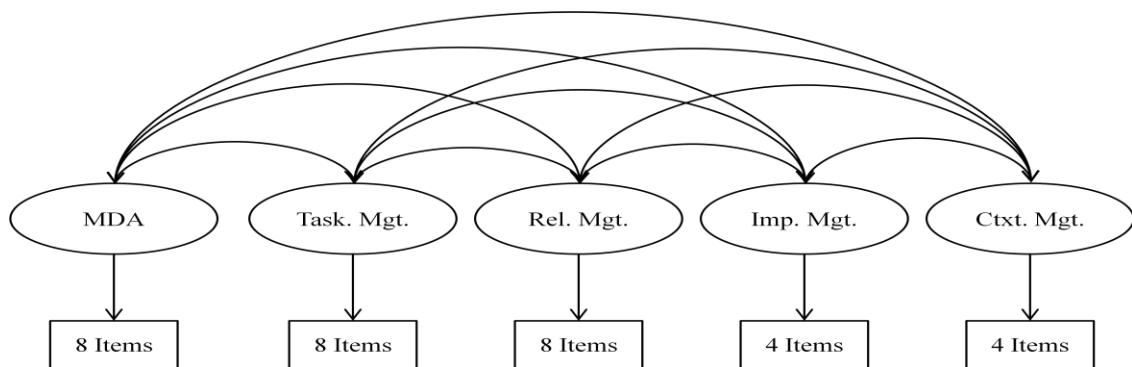


Figure 5. Five-factor model. MDA = monitoring, diagnosing, and action-planning; Task Mgt = task management; Rel. Mgt = relationship management; Imp. Mgt = impression management; Ctxt Mgt = context management. Items in the square box load on the corresponding latent factor.

OVERVIEW OF STUDIES

The purpose of this research effort was to make a case for small group leadership self-efficacy as a viable construct and develop and validate an instrument that operationalizes it. These objectives were accomplished by implementing two independent studies. In the first study, a 101-item measure of the construct was administered to a sample of undergraduate students resulting in a refined measure of 32 items and an accepted underlying factor structure for the construct's dimensions. A second study with an independent sample of undergraduate students was conducted to replicate the findings of the first study and to confirm and provide additional validity evidence for the measure.

After factor-analytically comparing five measurement models that resulted in the determination of the most parsimonious, best-fit factor structure, the study hypotheses were tested on the combined sample of participants from Study 1 and Study 2 with the final 23-item measure. An initial examination of the criterion-related validity of the small group leadership self-efficacy measure was attempted by investigating the extent to which it related to the acceptance of small group leadership roles. Variables that were expected to correlate with small group leadership self-efficacy—previous leadership experience, valence of previous leadership experience, previous leadership education and training, and subjective vitality—were tested. Figure 6 presents a graphical illustration of the data analytical sequence used in the present study.

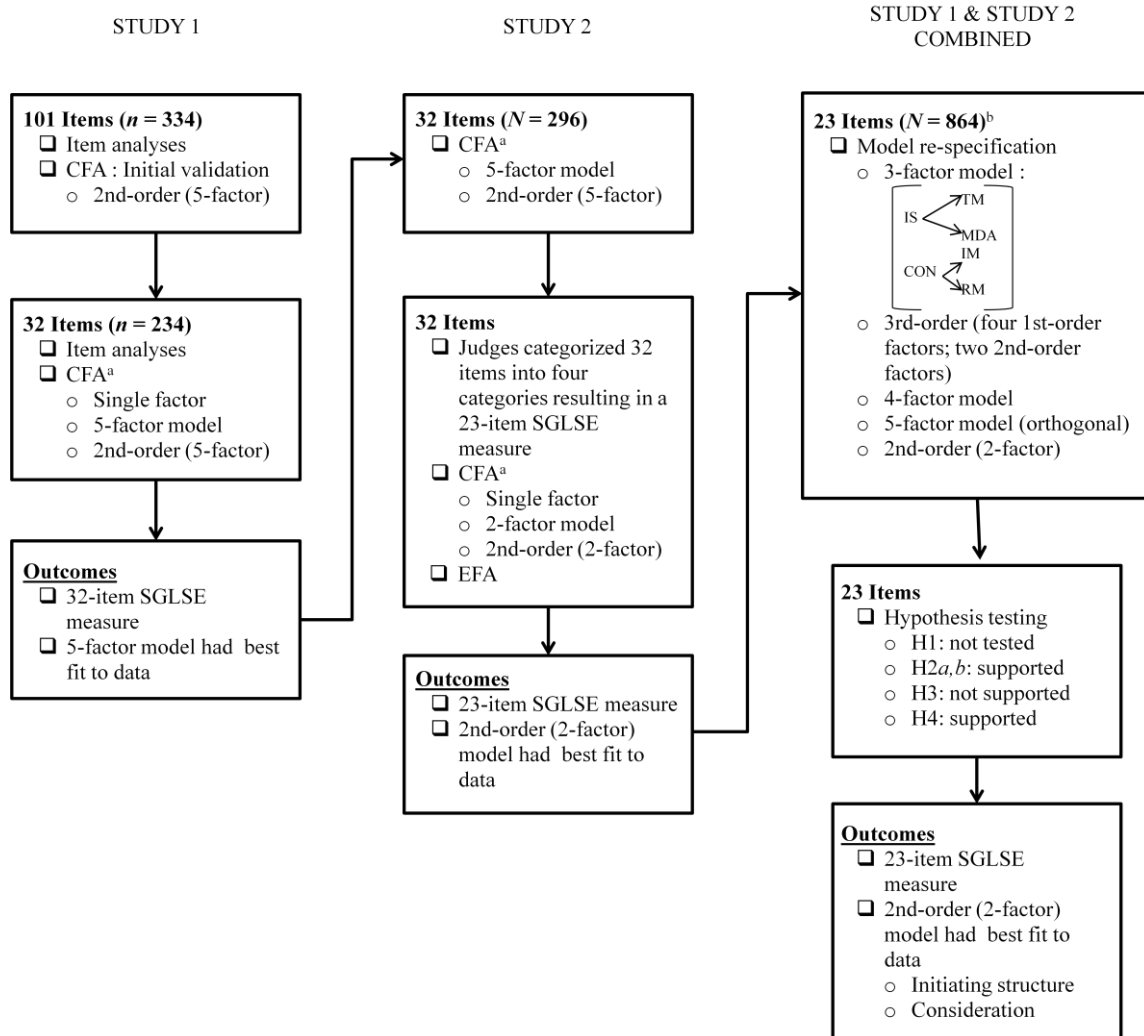


Figure 6. Flowchart of the data-analytical sequence. CFA = confirmatory factor analysis; EFA = exploratory factor analysis; SGLSE = small group leadership self-efficacy; IS = initiating structure; CON = consideration; TM = task management; MDA = monitoring, diagnosing, and action-planning; IM = impression management; RM = relationship management. ^a Cross validation and alternative model testing. ^b $N = 334 + 234 + 296 = 864$.

STUDY 1

The primary objective of Study 1 was to evaluate the small group leadership self-efficacy measure and items, and refine them as warranted. This was accomplished by investigating items and measure psychometric properties (e.g., reliability coefficients of scores derived from both the overall measure and its subscales, and the underlying factor structure of the construct). A second objective was to provide preliminary validity evidence for the small group leadership self-efficacy measure.

Method

Participants

Participants were recruited from the psychology department subject pool of Texas A&M University. The sample of 601 individuals (66.22% female) completed the measures online. They reported a mean age of 18.82 years ($SD = 2.24$). However, 33 participants who did not provide complete responses to the small group leadership self-efficacy measure were omitted from data analyses, thus, reducing the sample size to 568 [66.70% female; mean age of 18.80 years ($SD = 2.30$)]. Participation was voluntary and participants received partial course credit for taking part in the study.

Measures

Small group leadership self-efficacy. Small group leadership self-efficacy was assessed using 101 items (see Appendix C) which measured five overarching indicators of small group leadership self-efficacy—context management (8 items), impression management (19 items), monitoring, diagnosing, and action planning (21 items),

relationship management (26 items), and task management (27 items). Participants rated their confidence in performing the leadership behaviors on a five-point Likert scale (1 = *not confident at all*; 5 = *very confident*). Scores for the refined items were summed, such that higher scores indicate higher small group leadership self-efficacy.

Self-nomination for a leadership role vignette. As an initial criterion measure, participants responded to a short vignette describing a leadership scenario. This vignette, which was developed specifically for the present study, describes a work-setting where the self-nomination and acceptance of a leadership role is required (see Appendix D). Participants reported whether or not they would accept this leadership role and provided a rationale for making their decision. To avoid priming effects, this vignette was presented before the other measures.

Previous leadership experience, training, and education. As an initial, exploratory examination of the correlates of small group leadership self-efficacy, participants responded to open-ended questions asking them to reflect on their previous leadership experiences (see Appendix E). The first section of this measure provided examples of formal and informal leadership situations to help participants remember and determine what may be relevant prior leadership experiences. The second section requested information regarding formal leadership training and education. After listing their previous leadership experiences, education, and training, participants then reported whether these experiences were positive or negative on a dichotomously anchored scale.

Subjective vitality. The subjective vitality scale was developed by Ryan and Frederick (1997). The 6-item version of the scale (Bostic, Rubio, & Hood, 2000; see

Appendix F) was administered and scored using a five-point Likert scale (1 = *not true at all*; 5 = *very true*). Scores for the 6 items were summed, such that higher scores indicate higher subjective vitality. Previous factor analyses of the measure have supported a single-factor structure (see Bostic, Rubio, & Hood, 2000; Ryan & Frederick, 1997; Salama-Younes, Montazeri, Ismail, & Roncin, 2009), and scores derived from this measure have been shown to have good internal consistency with coefficient alphas of .84 (Nix, Ryan, Manly, & Deci, 1999) and .91 (Ryan & Frederick, 1997). Subjective vitality scores for the present study also achieved adequate levels of internal consistency ($\alpha = .87$), and confirmatory factor analyses supported a unidimensional factor structure ($\chi^2_{[9]} = 178.41$, CFI = 0.90, RMSEA = .18, SRMR = .05).

Procedure

Participants anonymously completed all four measures in an unproctored online session. In the first section of the protocol, participants completed the self-nomination measure by expressing their willingness to accept a leadership role. They next completed the small group leadership self-efficacy measure by rating their confidence in performing specific leadership tasks. In the third section, they completed items requesting information about their previous leadership experience, education, and training. Finally, they completed the subjective vitality measure. The protocol lasted approximately half an hour.

Data Analyses

Prior to performing any statistical analyses, the data was reviewed and cleaned for unusual responses and invalid data. This resulted in the elimination of the 33 cases

previously noted in the *Participants* section. A series of data analyses (i.e., confirmatory factor analysis, descriptive statistics, correlation analysis, item analysis, and internal consistency procedures) were then conducted.

To explore the psychometric properties of the small group leadership self-efficacy measure, the sample was randomly split into two subsamples, the developmental sample ($n = 334$) and the first cross-validation sample ($n = 234$) using the random selection algorithm in SAS[®]. The following steps were undertaken:

Initial Validation: Confirmatory Factor Analysis. To determine the factor structure of the small group leadership self-efficacy items, a confirmatory factor analysis (CFA) with the developmental sample ($n = 334$) was undertaken to establish that the implied factor structure fits the data (Meyers, Gamst, & Guarino, 2006). The purpose of the CFA was to explore the relationships among a large number of variables—latent and manifest variables (earlier explained). A CFA, instead of an exploratory factor analysis (EFA) approach, was used because it generates more definitive empirical evidence of the underlying factor structure of a measure in comparison to the exploratory approach (Cramer, 2000).

CFA was also used to further refine the measure, specifically items were retained only if they loaded .65 or higher on their assigned factor. A factor loading criterion of .65 or higher was interpreted as confirming a significant loading according to the guidelines of Hair et al. (1998) that factor loadings greater than .50 are considered substantially significant and meaningful.

Measure refinement was also further informed by the results of the item analyses, namely, scale alpha, item-total correlations, and item-deleted alpha coefficients. Items that had high correlations with their assigned factor were retained ($\geq .50$). Alpha-if-item-deleted statistics provided evidence for the items that were attenuating the reliability of the scale scores; hence, they were subsequently deleted. This procedure resulted in a refinement and reduction of the 101 items to the items that best capture each dimension (see Appendix G). The resulting items from both the CFA and item analyses constituted the revised measure of small group leadership self-efficacy.

In addition to producing the best items, the CFA provided a model fit summary in which the following absolute fit indices were considered: chi-square statistic, the Steiger-Lind root mean squared error of approximation (RMSEA; Steiger, 1990) with its 90% confidence interval, the Bentler comparative fit index (CFI; Bentler, 1990), and the standardized root mean square residual (SRMR). Although there is no single statistical test that best describes the strength of a model's effect (Hair et al., 1998), these fit statistics reflect the minimal set of fit indices that should be reported and interpreted when reporting factor analysis results (e.g., Boomsma, 2000; McDonald & Ho, 2002) because they provide standards to determine the degree to which the presumed relationships are similar to the observed data (Hair et al., 1998).

To demonstrate that the model conforms to the data, the chi-square statistic, the only statistically based measure of fit available in structural equation modeling (Hair et al., 1998), should not be significant (Floyd & Widaman, 1995). Care was taken when interpreting the chi-square statistic due to its sensitivity to sample size (Jöreskog, 1978)

especially for cases in which the sample size exceeds 200 respondents (Hair et al., 1998). The cutoff value of RMSEA $< .08$ as recommended by Funk, Ridinger, and Moorman (2004) was adhered to in order to reduce the number of Type I and Type II errors (Hu & Bentler, 1999), a CFI value $\geq .90$ indicates reasonable good fit of the theorized model (Hu & Bentler, 1999; Klein, 2005), and the SRMR value should be less than $.05$ for a good fit where values smaller than $.10$ may be interpreted as acceptable (Hu & Bentler, 1995).

Replicability Analyses: Cross-Validation I. To ensure that an accepted model fit represents something beyond mere statistical procedure, it is critical to replicate the measurement model (Klein, 2005) using independent samples. If the accepted model replicates in the subsequent samples, then this would be an indicator of construct validity (Kerlinger, 1986). Consistent with the assumption that if solutions will not replicate across subgroups of a single sample, then replication with a truly independent second sample seems particularly unlikely (Thompson, 2004), the first cross-validation effort was executed as a type of *internal* replicability analysis. With the revised measure of small group leadership self-efficacy, the empirical analyses described above was repeated using the first cross-validation sample ($n = 234$) derived from the randomly split sample.

Due to an acknowledgement of the existence of other theoretically plausible models, this study proceeded by testing two competing factor solutions (see Figures 2 and 5) against the hypothesized model (see Figure 1). Because the models are non-nested, the Akaike information criterion (AIC) test of difference in addition to the model

fit indices was computed to inform the decision as to whether the extracted model fits significantly better or worse than competing models. Specifically, the model with the smallest AIC was chosen as the one most likely to replicate (Klein, 2005).

Results

CFA with full information maximum likelihood method was used to estimate all measurement models. This method maximizes the likelihood that the sample was drawn from the population (Winer, Brown, & Michels, 1991).

Initial Validation

Consonant with the recommendation that whenever correlated first-order factors are obtained (see Table 1 for factor correlations using the initial 101 items), those first-order factor correlations should be factored to identify the underlying latent second-order factor (Cook & Thompson, 2000; Gorsuch, 1983) that explains the strong intercorrelations observed among the first-order factors, the proposed second-order CFA (consisting of five first-order factors or dimensions) was tested using all 101 small group leadership self-efficacy items in the developmental sample of 334 participants in order to gain the fullest possible understanding of the data. However, this model indicated a poor fit to the data ($\chi^2_{[4944]} = 10882.43$, CFI = .68; SRMR = .07; RMSEA = .06).

Consequently, the application of a factor loading criteria that progressed from $\geq .50$ to $\geq .65$ and an investigation of item analyses statistics led to a refined 32-item small group leadership self-efficacy measure (see Appendix G). Because this is a new measure, a conservative factor loading cutoff was adopted to ensure that the retained items were clearly satisfactory indicators of the construct. Also, analysis of the five

factors comprising the 32-item measure indicated a reliable measure with satisfactory internal consistency estimates and factors were correlated with one another as expected.

Table 1
Factor Correlations for all 101 items

Dimension	Mean	SD	1	2	3	4	5	6	7
1. Age	18.89	2.82	–						
2. Sex	0.67	0.50	-.10	–					
3. CNTX	3.82	0.61	-.02	.09	(.94)				
4. IM	4.06	0.48	-.03	.16*	.75*	(.94)			
5. MDA	3.83	0.55	-.03	.06	.80*	.79*	(.93)		
6. RM	4.00	0.52	-.02	.15*	.73*	.83*	.78*	(.94)	
7. TM	3.88	0.55	.03	.11*	.79*	.78*	.90*	.76*	(.93)

Note. $n = 334$. Sex: 0 = male, 1 = female. CNTX = context management; IM = impression management; MDA = monitoring, diagnosing, and action planning; RM = relationship management; TM = task management; * $p < .05$. All tests are two-tailed. Internal consistency estimates are along the diagonal.

Using the same developmental sample, a re-analysis of the hypothesized second-order CFA model (consisting of five first-order factors or dimensions) with the revised 32-item measure resulted in an adequate fit to the data as indicated by the earlier stipulated fit indices ($\chi^2_{[459]} = 971.16$, CFI = .91; SRMR = .07; RMSEA = .06).

As earlier acknowledged, because a satisfactory fit of a measurement model to one sample neither guarantees the acceptance of that model in another sample nor precludes the existence of other plausible models, the hypothesized model was not only

cross-validated with an independent sample, it was also pitted against other plausible models.

Test of Replicability: Cross-Validation I

To cross-validate the accepted second-order factor solution (consisting of five first-order factors or dimensions) of the initial validation step and to test the existence of two competing alternative models, additional CFAs were carried out using an independent sample. Using the 32-item measure, a CFA was calculated for the single-factor model, the five-factor model, and the second-order model with five first-order factors. Model fit indices for these two competing models as well as the hypothesized second-order model are reported in Table 2.

Using the second part of the randomly split sample as the first cross-validation sample ($n = 234$), results indicated that the proposed second-order model with five first-order factors lacked acceptable fit to the data. Of the two alternative models, the five-factor model was accepted as the model with the best fit to the data ($\chi^2_{[454]} = 837.69$, CFI = .90; SRMR = .06; RMSEA = .06; AIC = 15291.46). As expected, the single-factor model revealed the poorest fit to the data because it is a restricted version of the other two models. Table 2 presents model fit indices for all steps taken during Study 1's validation procedure.

To summarize, Study 1 resulted in a refined 32-item measure of small group leadership self-efficacy. The reliability coefficient for the scores derived from the overall scale for all 234 participants was $\alpha = .95$. The descriptive statistics (means, standard deviations, and reliabilities) as well as correlations among study variables for the sample

on which data analyses were based for Study 1 are presented in Table 3. A multidimensional factor structure with an overarching second-order latent construct was confirmed as the best fit to the data.

Table 2
Summary of Model Fit Indices across Study 1's Validation Steps

Models tested	χ^2	<i>df</i>	CFI	SRMR	RMSEA	90%CI	AIC
Initial Validation (<i>n</i> = 334)							
2nd-order model_101 items	10882	4944	.68	.07	.06	.06, .06	74236
2nd-order model_32 items	971	459	.91	.07	.06	.05, .06	21870
Cross validation I (<i>n</i> = 234) ^a							
1-factor model	1552	464	.72	.10	.10	.10, .11	15986
5-factor model	837	454	.90	.06	.06	.05, .07	15291
2nd-order model	993	460	.87	.09	.07	.06, .08	15436

Note. CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root-mean-square error of approximation; 90% CI = 90% confidence interval around RMSEA estimates; AIC = Akaike information criterion. All χ^2 statistically significant. ^a The 32-item small group leadership self-efficacy measure.

Table 3

Descriptive Statistics and Zero-order Correlations among All Variables in Study 1 Based on 32-item SGLSE Measure for the Initial and Cross-Validation Sample

Variable	<i>M (SD)</i> ^a	1	2	3	4	5	6	7	8	9	10	11	12	13	<i>M (SD)</i> ^b
1. Age	18.90 (2.91)	–	-.18*	.10	-.03	.09	-.00	.05	.05	-.02	-.33*	.04	-.20*	.01	18.71 (1.09)
2. Sex	0.68 (0.50)	-.10	–	-.05	.18*	.00	.12	-.01	.05	.02	.05	-.08	.07	.03	.69 (0.50)
3. CNTX	3.88 (0.59)	-.02	.10	.80/.70	.42*	.71*	.60*	.70	.82*	.14*	.10	.01	.07	.33*	3.78 (0.67)
4. IM	4.09 (0.44)	-.03	.16*	.73*	.73/.73	.27*	.71*	.28*	.60*	-.06	.13*	.02	-.01	.21*	4.31 (0.66)
5. MDA	3.85 (0.52)	-.03	.06	.77*	.77*	.73/.69	.55*	.86*	.87*	.17*	.15*	.06	.09	.30*	3.88 (0.61)
6. RM	4.02 (0.49)	.02	.14*	.69*	.81*	.76*	.73/.69	.57*	.84*	.12	.20*	.01	.11	.30*	4.14 (0.59)
7. TM	3.90 (0.52)	.03	.12*	.77*	.78*	.88*	.74*	.73/.69	.88*	.20*	.14*	.01	.18*	.30*	3.92 (0.63)
8. SGLSE	127.62 (15.98)	-.01	.16*	.84*	.86*	.90*	.88*	.90*	.72/.67	.16*	.18*	.03	.13	.35*	127.82 (16.39)
9. PLX	3.27 (1.67)	-.04	.09	.03	.06	.02	.03	.04	.04	–	-.04	.39*	.02	.00	3.35 (1.63)
10. PLXV	0.87 (0.31)	-.05	.02	.12*	.16*	.15*	.14*	.14*	.16*	-.11	–	-.04	.15*	.21*	.87 (0.35)
11. LE/T	1.46 (1.70)	-.07	-.04	.05	.02	.04	.01	.05	.04	.52*	-.08	–	.03	.00	1.29 (1.57)
12. LRA	0.96 (0.28)	-.03	.10	.09	.06	.05	.12*	.04	.07	.04	.02	-.04	–	.14*	0.90 (0.44)
13. SV	19.63 (5.04)	.03	.01	.32*	.36*	.28*	.33*	.31*	.34*	.13*	.03	.07	.01	.78/.74	19.51 (4.86)

Note. Coefficients for initial validation ($n = 310$) are below the diagonal while those above the diagonal are for cross validation I ($n = 220$). Participants who did not provide complete responses for all study variables were dropped for these analyses. Sex: 0 = male, 1 = female. CNTX = context management; IM = impression management; MDA = monitoring, diagnosing, & action planning; RM = relationship management; TM = task management; SGLSE = small group leadership self-efficacy; PLX: previous leadership experience; PLXV = previous leadership experience valence; LE/T = leadership education/training; LRA = leadership role acceptance; SV = subjective vitality. * $p < .05$. All tests are two-tailed. Internal consistency estimates are along the diagonal with initial validation on the left and cross validation I on the right. ^a Initial validation sample. ^b Cross-validation sample.

STUDY 2

Although the results of Study 1 clearly provided some psychometric support for the small group leadership self-efficacy measure, replication of the pattern of results with an independent sample was not conducted. Therefore, Study 2 was designed to replicate and extend the findings of Study 1 and provide a more comprehensive assessment of the small group leadership self-efficacy measure.

Method

Participants

Participants were recruited using the same recruitment process used in Study 1 and they completed all four measures online. The sample of 300 individuals (57.5% female) reported a mean age of 19.07 years ($SD = 0.91$). The sample size was reduced to 296 [56.9% female, mean age of 19.05 years ($SD = 0.89$)] due to the omission of 4 participants who did not provide complete responses to the small group leadership self-efficacy measure. Again, participation was voluntary and participants received partial course credit for taking part in the study.

Seven industrial/organizational psychology doctoral-level graduate students (28.6% female) categorized the 32 items into either initiating structure, consideration, both, or neither. They were sent an e-mail message providing them with a brief description of the two leadership categories, detailed cover letter describing their role and requesting their participation, the revised 32-item small group leadership self-

efficacy measure, and a categorization excel spreadsheet. The judges had no information about the purpose of the study.

Measures

Self-nomination for a leadership role vignette, previous leadership experience, training, and education, and subjective vitality were assessed with the same items as in Study 1. However in Study 2, small group leadership self-efficacy was measured with the refined 32-items from Study 1.

Small group leadership self-efficacy. Small group leadership self-efficacy was assessed using the revised 32 items which also measured five overarching indicators of small group leadership self-efficacy—context management (4 items), impression management (4 items), monitoring, diagnosing, and action planning (8 items), relationship management (8 items), and task management (8 items). Participants rated their confidence in performing the leadership behaviors on a five-point Likert scale (1 = *not confident at all*; 5 = *very confident*). Scores for the refined items were summed, such that higher scores indicate higher small group leadership self-efficacy.

Subjective vitality. Subjective vitality scores also achieved an adequate internal consistency estimate in the present study ($\alpha = .88$), and confirmatory factor analyses supported a unidimensional factor structure ($\chi^2_{[9]} = 93.48$, CFI = 0.92, RMSEA = .18, SRMR = .04).

Procedure

Execution of Study 2 was largely the same as in Study 1, with the exception of the shorter small group leadership self-efficacy measure participants completed. The protocol lasted approximately 15 minutes.

Data Analyses

Like in Study 1, the data was reviewed and cleaned for unusual responses and invalid data prior to performing any statistical analyses. This resulted in the elimination of 4 cases from the data analytic procedures due to incomplete responses to the 32-item small group leadership self-efficacy measure. Agreement statistics and EFA were conducted in addition to the analytical procedures of Study 1.

Replicability Analyses: Cross-Validation II. To further confirm the psychometric properties and the factor structure of the small group leadership self-efficacy measure accepted in Study 1, a replication with data collected from an independent sample was conducted. In addition to the two competing models tested in Study 1 (see Figures 2 and 5), the two-factor model (see Figure 3) and the second-order model with two first-order factors (see Figure 4) were also tested.

Exploratory Factor Analysis. As an additional test of whether the model accepted based on the preceding analyses is the best model, an EFA of the refined set of items was conducted (Floyd & Widaman, 1995) as it was expected that the EFA will extract the same factors analogous with the CFA factor structure. EFA is used to explore the dimensionality of an instrument by finding the smallest number of interpretable factors. Responses to the items were subjected to a maximum likelihood EFA with an oblique

(promax) rotation because the factors were expected to correlate (Tabachnick & Fidell, 2012). The main purpose of factor rotation is to obtain a better interpretation of factors (Nunnally, 1978) and to maximize factor loadings.

To determine the number of factors to be retained, three methods were utilized, the Kaiser or mineigen greater than 1 criterion (K1), which retains factors with eigenvalues greater than 1 (Kaiser, 1960); Cattell's (1966) scree test, which involves an examination of a plot of the eigenvalues for breaks or discontinuities to retain only factors that do not belong to the scree (Cattell & Jaspers, 1967); and the parallel analysis method based on the rationale that nontrivial components from real data with a valid underlying factor structure should have larger eigenvalues than parallel components derived from random data having the same sample size and number of variables (Ford, MacCallum, & Tait, 1986; Lautenschlager, 1989).

Although the K1 rule and the scree test are the most commonly used methods of factor retention, they suffer from some notable deficiencies. For instance, a number of studies have shown that the K1 rule is inaccurate and tends to overfactor (Horn, 1965; Linn, 1968; Silverstein, 1987). The scree test has also been found to suffer from subjectivity, ambiguity, and it overestimates number of factors (Zwick & Velicer, 1986). In contrast, parallel analysis is recognized as one of the most accurate methods for determining the number of factors to retain (e.g., Horn, 1965; Humphreys & Montanelli, 1975; Zwick & Velicer, 1986). Because of parallel analysis' proven merit (Thompson & Daniel, 1996) it was used as the factor retention method in the present study. Specifically, as a more conservative approach, the eigenvalues from the actual data were

compared to those from the 95th percentile of eigenvalues generated from random data rather than the average eigenvalues. Only factors from the real data with eigenvalues greater than the corresponding eigenvalue from the random data were retained.

Results

Preliminary Results

The Fleiss (1981) Kappa statistic was calculated to assess the level of agreement among 7 independent judges in sorting the 32 items of the revised measure of small group leadership self-efficacy into four categories. The initial sorts resulted in a Kappa agreement rating of .63 for the initiating structure category and .80 for the consideration category. Of the 32 items, 8 were discarded for not meeting the majority item-to-category assignments (i.e., 5 judges or greater) and 1 was discarded for being the only retained item of a factor (context management). This resulted in 23 retained items with 12 items representing the construct of initiating structure and 11 items reflecting consideration. The Fleiss Kappa statistic was re-calculated for the 23 retained items, resulting in an agreement of .80 for the initiating structure category and .84 for the consideration category. These Kappa values are excellent according to Fleiss (1981) who suggested that Kappa values above .75 be interpreted as excellent.

Test of Replicability: Cross-Validation II

Using the second cross-validation sample ($N = 296$) consisting of participants who only completed the refined 32-item measure, another cross-validation effort was conducted. First, a CFA was calculated for the five-factor model and the second-order five-factor model using all 32 items. Second, another CFA was calculated with the 23-

item measure sorted by the independent judges for the two-factor model, the second-order model with two first-order factors, and the single-factor model.

Concerning the second-order model with two first-order factors, both first-order factors, initiating structure and consideration, were permitted to load on the second-order latent factor, small group leadership self-efficacy. However, without additional constraints on the relationship of the first-order factors to the second-order factor, this hierarchical model was not identified because the model did not meet the identification requirement that higher-order factors must have at least three first-order factors (Byrne, 1998) to result in convergence and proper solutions. Because the model is nominally identified based on its structure and previous research findings (e.g., Bass & Bass, 2008; Judge et al., 2004; Lowin et al., 1969; Weissenberg & Kavanagh, 1972) and because the “two indicator rule” stipulates that a measurement model with two correlated factors and two congeneric indicators loading on each factor should be identified (Kenny, 1979), identification for this competing model was achieved by fixing the residual variances for the first-order factors equal to one another.

Of the five models tested in Study 2, the second-order model with two first-order factors fit the data best ($\chi^2_{[229]} = 536.42$, CFI = .91; SRMR = .06; RMSEA = .07; AIC = 14182.90). See Table 4 for the fit indices of all tested models. This cross-validation effort can be said to be a rigorous test of model replicability not only because data were collected from a separate sample but also because the number of items completed by these participants compared to those in Study 1 whom the initial and first cross-validation effort was based were greatly reduced. Thus, the likelihood of severe item

dependence (i.e., response to one item being influenced by previous response to another item) was largely circumvented. To further expound, because participants used for the second cross-validation analysis responded to only the 32-item measure, a violation of the assumption in classical test theory that all measurement error is random is reduced as a result of low item dependence compared to the 101-item measure completed by Study 1 participants where higher item dependence likely resulted in systematic error which may have prevented the reliability of the measure from being accurately estimated (Baldauf, 1982). Again, among the five tested models, the single-factor model revealed the poorest fit.

Table 4
Summary of Model Fit Indices for Study 2

Models tested	χ^2	<i>df</i>	<i>CFI</i>	SRMR	RMSEA	90% CI	AIC
Cross Validation II (<i>N</i> = 296)							
1-factor model ^A	1551	230	.74	.10	.12	.11, .12	14795
2-factor model ^A	659	230	.88	.21	.08	.07, .09	14303
2nd-order model (2-factor) ^A	536	229	.91	.06	.07	.06, .08	14182
5-factor model ^B	Model is not admissible to the data						
2nd-order model (5-factor) ^B	1127	459	.86	.08	.07	.07, .08	20102

Note. *N* = 296. CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root-mean-square error of approximation; 90% CI = 90% confidence interval around RMSEA estimates; AIC = Akaike information criterion. All χ^2 statistically significant. ^AThe 23-item small group leadership self-efficacy measure. ^BThe 32-item small group leadership self-efficacy measure.

The descriptive statistics (means, standard deviations, and reliabilities) as well as correlations among study variables for the sample on which data analyses were based are presented in Table 5.

Exploratory Factor Analysis

As a robust test of model replicability and in consonance with previous organizational behavior studies (Conway & Huffcutt, 2003; Ford et al., 1986), the accepted second-order model with two-factor solution was further explored using the EFA. The PROC FACTOR program in SAS[®] in which NFACTOR = 2 was specified. A maximum likelihood EFA with promax (non-orthogonal) rotation was used to extract the specified number of factors from the 23 items. An inspection of the eigenvalues of the correlation matrix revealed that four factors had an eigenvalue greater than 1. However, only two factors were retained because the difference between the successive eigenvalues (i.e., factor 2, factor 3, and factor 4) was negligible. Moreover, a visual analysis of the scree plot (see Figure 7 for a graphical distribution of factor loadings) revealed the presence of two clear factors above the inflexion point below which the rest of the factors constitute factorial debris. Because the scree plot also indicated the possibility of a third factor, the parallel analysis factor retention result was considered before the final decision concerning the number of factors was reached.

In keeping with the parallel analysis technique, the 95th percentile eigenvalues from a random correlation matrix were compared to the eigenvalues from the real data correlation matrix, such that the first observed eigenvalue was compared to the first

Table 5

Descriptive Statistics and Zero-order Correlations Among All Variables in Study 2 Based on 23-item SGLSE Measure.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	–													
2. Sex	.01	–												
3. IM	.04	.08	(.78)											
4. MDA	-.02	.01	.42*	(.78)										
5. RM	.08	.07	.73*	.45*	(.77)									
6. TM	.00	.01	.45*	.85*	.53*	(.78)								
7. Initiating structure	.00	.01	.45*	.95*	.51*	.98*	(.77)							
8. Consideration	.07	.08	.89*	.47*	.96*	.53*	.53*	(.77)						
9. SGLSE	.04	.05	.75*	.83*	.83*	.87*	.89*	.86*	(.76)					
10. Previous lead. exp.	-.01	.13*	.10	.12*	.16*	.13*	.13*	.15*	.16*	–				
11. Previous lead. exp. val.	-.02	-.07	.13*	.00	.08	.00	.00	.10	.06	-.18*	–			
12. Lead. education/training	.01	.05	.07	.07	.11	.05	.06	.10	.09	.50*	-.07	–		
13. Lead. role acceptance	.04	-.06	.07	.13*	.07	.13*	.13*	.07	.12*	.17*	-.05	.05	–	
14. Subjective vitality	.02	-.07	.36*	.33*	.39*	.33*	.34*	.40*	.42*	.14*	.14*	.10	-.02	(.80)
<i>Mean</i>	19.03	0.58	4.23	3.95	4.10	4.00	3.98	4.15	93.98	3.46	0.91	1.64	0.96	19.70
<i>Standard Deviation</i>	0.90	0.50	0.65	0.63	0.63	0.64	0.61	0.60	12.17	1.83	0.25	1.82	0.27	5.11

Note. $N = 279$ (participants who did not provide complete responses for all study variables were dropped for these analyses). Sex: 0 = male, 1 = female. IM = impression management; MDA = monitoring, diagnosing, & action planning; RM = relationship management; TM = task management; SGLSE = small group leadership self-efficacy; lead = leadership; exp = experience; val = valence. * $p < .05$. All tests are two-tailed. Internal consistency estimates are along the diagonal.

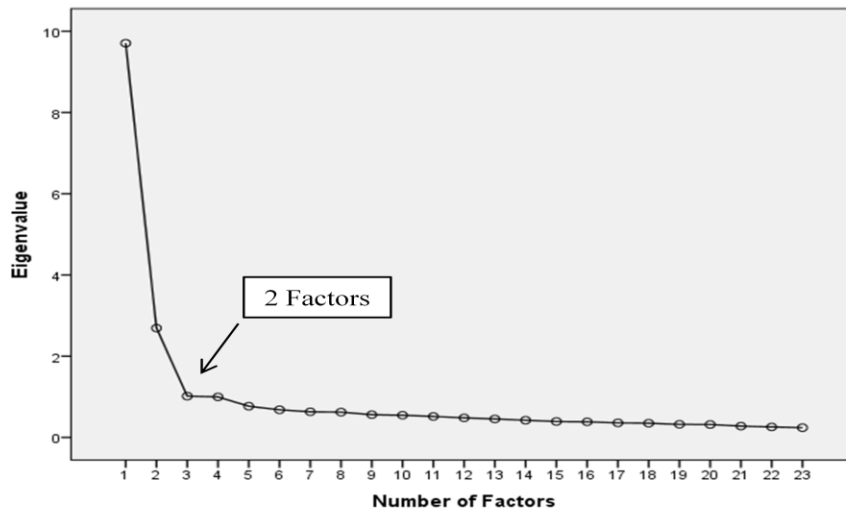


Figure 7. Scree plot of the final measure of small group leadership self-efficacy.

random eigenvalue, the second observed eigenvalue was compared to the second random eigenvalue, and so on. This resulted in a retention of only two factors corresponding to actual eigenvalues that are greater than the parallel 95th percentile random eigenvalues because actual eigenvalues less than or equal to the parallel random eigenvalues are considered due to sampling error (Glorfeld, 1995; Horn, 1965; Zwick & Velicer, 1986). Thus, researchers would not be interested in a factor that does not account for more variance than the parallel factor obtained from random numbers because meaningful components extracted from actual data should have larger eigenvalues than parallel eigenvalues obtained from random data (Montanelli & Humphreys, 1976; Turner, 1998). Table 6 reports the parallel analysis result.

The EFA confirmed that the 23-item small group leadership self-efficacy measure is structurally sound and reliable because the majority of the items had a factor loading of .60 and higher (Stevens, 1996). Items that represented a factor reflected an

ideal solution as no item loaded highly on both factors, thus, suggesting a conceptually meaningful and readily interpretable factor solution. The first factor contained items that are consistent with the definition of the initiating structure category and the second factor contained items that are consistent with the consideration category. Eigenvalues of the weighted reduced correlation matrix shows eigenvalues of 17.86 and 4.36 for the two extracted factors. Cumulative variance for the two factors is 100%. Table 7 presents the factor loadings for the two-factor solution after the promax rotation was implemented.

Table 6
PA Factor Extraction for the Final Small Group Leadership Self-Efficacy Measure

Factor #	Raw Data	Means	95% Percentile
1.	9.70	1.54	1.62
2.	2.69	1.45	1.51
3.	1.02	1.38	1.44
4.	1.00	1.32	1.37
5.	0.77	1.27	1.31
6.	0.68	1.22	1.26
7.	0.63	1.18	1.22
8.	0.62	1.13	1.17
9.	0.56	1.09	1.13
10.	0.55	1.05	1.09
11.	0.52	1.01	1.05
12.	0.48	0.98	1.01
13.	0.45	0.94	0.97
14.	0.42	0.90	0.94
15.	0.39	0.87	0.90
16.	0.38	0.83	0.87
17.	0.36	0.80	0.83
18.	0.35	0.77	0.80
19.	0.32	0.73	0.76
20.	0.32	0.69	0.72
21.	0.28	0.66	0.69
22.	0.26	0.61	0.65
23.	0.24	0.56	0.61

Note. N = 296. PA = parallel analysis.

Table 7

Factor Loadings for the Final Small Group Leadership Self-Efficacy Measure using Maximum Likelihood EFA with Promax Rotation

#	Item Description	M(SD)	I	II
1.	Determine the most critical areas for making improvements in your group's effectiveness.	3.87(.84)	.78	-.11
2.	Develop a good plan for improving your group's performance, if needed.	3.90(.88)	.76	-.03
3.	Run group meetings efficiently	3.94(.93)	.74	-.07
4.	Have a clear purpose and set of objectives for each group meeting.	4.07(.92)	.71	-.03
5.	Express clearly what you expect from each member of your group.	3.90(.92)	.69	-.05
6.	Set and enforce high standards of performance in your group.	4.14(.86)	.67	.07
7.	Figure out an overall strategy that will help your group accomplish its task.	4.09(.80)	.67	.10
8.	Help your group set measurable goals for any project they are assigned to complete.	4.04(.82)	.65	.19
9.	Analyze information about your group's performance to determine how things are going.	3.96(.82)	.63	.05
10.	Help organize your group's decision-making process so that good quality decisions are made.	3.96(.86)	.62	.19
11.	Develop ways for keeping track of individual and group performance.	3.88(.91)	.60	.09
12.	Help individual group members develop action plans for improving their performance.	3.82(.96)	.47	.19
13.	Make sure each member feels included in your group.	4.14(.87)	-.11	.81
14.	Help others feel comfortable being part of your group.	4.26(.85)	.00	.78
15.	Be friendly and approachable.	4.34(.82)	.02	.73
16.	Show kindness and warmth towards others.	4.28(.78)	-.03	.73
17.	Build the confidence of group members.	4.03(.89)	.09	.70
18.	Act in ways that cause others to like you.	4.09(.89)	-.04	.68
19.	Make others feel good to be around you.	4.13(.84)	.12	.66
20.	Maintaining group harmony.	3.92(.86)	-.01	.64
21.	Create an emotionally safe climate for group members to openly discuss any issue related to your group's success.	4.09(.87)	.03	.63
22.	Promote an atmosphere of mutual trust in your group.	4.19(.81)	.14	.57
23.	Build a sense of togetherness among group members.	3.90(.93)	.19	.56

Note. $N = 296$. Item numbers are not as they appear in the original measure. I = factor 1 (initiating structure); II = factor 2 (consideration).

In summary, rather than replicating Study 1's pattern of results, Study 2 resulted in not only a reduced measure of the construct but also an acceptable second-order model with two first-order factors (initiating structure and consideration) as revealed by the CFA and EFA procedures (see Figure 4). Initially a rival model, this model is not only consistent with the proposed theoretical structure of the small group leadership self-efficacy construct but is also a more parsimonious model (i.e., uses a common factor to explain shared variance in the first-order factors).

STUDY 1 AND STUDY 2 COMBINED

Model Respecification and Supplementary Analyses

Because the results of the CFA in Study 2 did not support the a priori hypothesis, the measurement model was respecified and reanalyzed. The relevant initiating structure and consideration literature (Bass & Bass, 2008; Judge et al., 2004; Lowin et al., 1969; Weissenberg & Kavanagh, 1972) and results of data analyses in Study 2 guided this procedure. An examination the items within the two first-order factors that make up the accepted second-order model in Study 2 revealed that four of the originally proposed five dimensions of small group leadership self-efficacy conceptually map on to initiating structure (task management and monitoring, diagnosing, and action planning factors) and the consideration (relationship management and impression management dimensions) without any overlap.

Given that the four factors (task management, monitoring, diagnosing, and action planning, relationship management, and impression management) were moderately correlated, a number of supplementary analyses were undertaken. First, consonant with the hypothesis that all responses to the 23 items are driven by a single underlying construct, a third-order factor solution was attempted with four first-order factors loading on two second-order factors (initiating structure and consideration) and those second-order factors loading on a third-order latent factor (small group leadership self-efficacy). However, the model was inadmissible in both Study 1 and Study 2 samples. Second, a four-factor model was also tested and the results indicated an improper model

due to the presence of an ultra Heywood case (correlations of task management and monitoring, diagnosing, and action planning was greater than 1.0). This situation informed a third supplementary analysis, the three-factor model with task management and monitoring, diagnosing, and action planning merged. This also resulted in an improper solution with negative residual variances in some datasets (another Heywood case). Finally, although factor correlations among the original five factors were moderate to high, an uncorrelated five-factor model was attempted. However, results revealed that this model, across all samples, lacked adequate fit. The lack of consistency of these factor structures across study samples is consonant with some researchers' argument that artifacts inherent in single studies induce quantitative errors that lead to false conclusions and alter practical implications of the findings (Hunter & Schmidt, 1987; Schmidt, 1996).

Consequently, the second-order model with initiating structure and consideration as its first-order factors was adopted for the remaining analyses. This model was first re-estimated in the developmental sample with improved fit indices ($\chi^2_{[229]} = 439.56$, CFI = .94; SRMR = .05; RMSEA = .05). Item-analyses did not suggest the elimination of additional items. A comparison of the fit indices for the original 101-item measure and the revised 23-item measure for the combined Study 1 and Study 2 sample ($N = 864$) is presented in Table 8, and Appendix H presents the list of the 23 indicators of the two small group leadership self-efficacy factors.

Table 8
Summary of Model Fit Indices across the Original and Refined Measures of Small Group Leadership Self-Efficacy

Models tested	χ^2	<i>df</i>	<i>CFI</i>	<i>SRMR</i>	<i>RMSEA</i>	90% CI	AIC
Full measure (101 items)							
1-factor model	15736	4949	.69	.07	.05	.05, .05	147652
5-factor model	13524	4939	.75	.07	.05	.04, .05	145461
Second-order model (5-factor)	13975	4944	.74	.07	.05	.05, .05	145901
Revised measure (23 items)							
1-factor model	2725	230	.75	.10	.11	.11, .12	42593
2-factor model	1231	230	.90	.20	.07	.07, .08	41427
Second-order model (2-factor)	910	229	.93	.05	.06	.06, .06	40780

Note. $N = 864$. *CFI* = comparative fit index; *SRMR* = standardized root mean square residual; *RMSEA* = root-mean-square error of approximation; 90% *CI* = 90% confidence interval around *RMSEA* estimates; *AIC* = Akaike information criterion. All χ^2 statistically significant.

A multi-group CFA was conducted to test the invariance of the identified second-order model across the Study 1 and Study 2 samples. This was done using the 23-item measure. First, a configural model that constrained the data from both samples to represent a second-order factor solution with two first-order factors was estimated. The results of this test confirmed that the second-order factor solution had good fit in both subsamples ($\chi^2_{[481]} = 1265.63$; *CFI* = .92; *SRMR* = .06; *RMSEA* = .06). Second, as an additional constraint, a model that constrained the factor loadings to be the same for both subsamples to assess metric invariance was estimated. This model likewise revealed acceptable fit to the data ($\chi^2_{[502]} = 1286.45$; *CFI* = .92; *SRMR* = .06; *RMSEA* = .06). Because these represent nested models, a chi-square difference test was conducted which revealed a negligible difference in the fit of the metric invariance model relative to the

configural model ($\Delta\chi^2_{[21]} = 20.82, p > .05$). This provides additional support for the identified second-order factor structure and satisfies the accepted standard for concluding measurement equivalence across the two subsamples (Byrne, Shavelson, & Muthén, 1989).

Hypotheses Testing

Although an attempt was made to present criterion-related validity evidence for the small group leadership self-efficacy measure by correlating it with the willingness to accept a leadership role variable, an observance of the low variability in participants' responses to the leadership role variable (with only 26 participants responding non-affirmatively out of the 856 participants that responded to the question; $M = .94, SD = .34$) made it impossible to meaningfully test this hypothesis. Therefore, Hypothesis 1 was dropped from further consideration.

Table 9 presents the descriptive statistics (means, standard deviations, and reliabilities) as well as correlations among study variables for the combined samples ($N = 809$; 55 cases excluded due to missing data). As these results indicate, previous leadership experience ($r = .11, p < .05$), valence of previous leadership experience ($r = .14, p < .05$), and subjective vitality ($r = .37, p < .05$) were positively correlated with small group leadership self-efficacy, thus supporting Hypothesis 2a, 2b, and 4 respectively. However, the relationship between previous leadership education and small group leadership self-efficacy ($r = .06, p > .05$) failed to provide support for Hypothesis 3. The results also indicate that initiating structure and consideration were moderately

correlated and hypothesis testing at the level of the dimensions revealed a pattern of results similar to that obtained for the composite measure (see Table 9).

In summary, the results of model respecification and re-estimation analyses using the collapsed samples provided support for small group leadership self-efficacy's conceptual factor structure and suggest that the construct is represented well by an overarching small group leadership self-efficacy factor (see Figure 4). Support for this factor structure is noteworthy because it not only articulates the lower-order indicators that best represent small group leadership self-efficacy's general content domain, but it confirms the existence of a higher-order factor that parsimoniously explains common variance across these two dimensions. Additionally, the good fit of the accepted factor structure to the data from the two samples provides partial support for the generalizability of these findings. Finally, the pattern of significant associations between small group leadership self-efficacy and the hypothesized correlates is largely consistent with past research findings (Bobbio & Manganelli, 2009; Chan & Drasgow, 2001; Paglis & Green, 2002), providing construct validity evidence for the small group leadership self-efficacy measure.

Table 9
Descriptive Statistics and Zero-order Correlations Among All Variables in Study 1 and Study 2 Based on 23-item SGLSE Measure

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	–													
2. Sex	-.09*	–												
3. IM	.00	.16*	(.82)											
4. MDA	-.01	.01	.33*	(.83)										
5. RM	.01	.13*	.71*	.49*	(.88)									
6. TM	.02	.05	.37*	.83*	.54*	(.86)								
7. Initiating structure	.01	.04	.37*	.94*	.54*	.97*	(.92)							
8. Consideration	.01	.15*	.88*	.47*	.96*	.51*	.51*	(.91)						
9. SGLSE	.01	.10*	.70*	.83*	.85*	.87*	.89*	.85*	(.93)					
10. Previous lead. exp.	-.03	.08*	.03	.11*	.10*	.10*	.11*	.08*	.11*	–				
11. Previous lead. exp. val.	-.09*	-.01	.12*	.10*	.15*	.09*	.10*	.15*	.14*	-.11*	–			
12. Lead. education/training	-.03	-.02	.03	.08*	.05	.03	.05	.05	.06	.48*	-.06	–		
13. Lead. role acceptance	-.04	.04	.04	.08*	.09*	.11*	.10*	.08*	.10*	.07*	.06	.02	–	
1. Subjective vitality	.02	-.02	.27*	.29*	.34*	.30*	.31*	.34*	.37*	.10*	.12*	.07	.04	(.87)
<i>Mean</i>	18.89	0.65	4.30	3.87	4.12	3.96	3.92	4.19	93.13	3.36	0.89	1.48	0.95	19.62
<i>Standard Deviation</i>	1.96	0.48	0.64	0.63	0.60	0.62	0.60	0.57	11.73	1.72	0.30	1.71	0.33	5.01

Note. $N = 809$ (participants who did not provide complete responses for all study variables were dropped for these analyses). Sex: 0 = male, 1 = female. IM = impression management; MDA = monitoring, diagnosing, & action planning; RM = relationship management; TM = task management; lead = leadership; exp = experience; val = valence; SGLSE = small group leadership self-efficacy. * $p < .05$. All tests are two-tailed. Internal consistency estimates are along the diagonal.

DISCUSSION AND CONCLUSION

This thesis describes the development and validation of a theoretically-based and empirically-derived measure of small group leadership self-efficacy, an individual's degree of confidence in his/her ability to successfully assume a leadership role in a small group. Towards the accomplishment of this overarching goal, a content valid 101-item measure was administered to a sample of undergraduate students in Study 1 which resulted in 32 refined items. In Study 2, these 32 items were administered to another undergraduate student sample where item and factor-analytic procedures confirmed a 23-item second-order construct encompassing initiating structure and consideration leadership behavioral efficacies.

Using the combined Study 1 and Study 2 samples, the results revealed that small group leadership self-efficacy was related to previous leadership experience (Hypothesis 2*a*), valence of previous leadership experience (Hypothesis 2*b*), and subjective vitality (Hypothesis 4). These findings are consistent with previous leadership self-efficacy research (Bobbio & Manganelli, 2009; Chan & Drasgow, 2001; McCormick et al., 2002; Paglis & Green, 2002). However, Hypothesis 3, which had posited that previous leadership education will be positively related to small group leadership self-efficacy, was not supported. This lack of support was not surprising given the nature of the sample and their reported lack of exposure to formal leadership training and education. Finally, the data did not permit a test of Hypothesis 1, which posited that small group

leadership self-efficacy will be related to the willingness to accept a leadership role, because of the low variability in participants' responses to the variable.

Although the results obtained did not support the hypothesized second-order five-factor measurement model (Hypothesis 5), it confirmed that small group leadership self-efficacy is a multidimensional construct encompassing initiating structure and consideration. In addition, the dimensions of the accepted second-order two-factor model are not completely exclusive of the hypothesized five dimensions because the 23-items that make up these two factors conceptually map on to four of the proposed five dimensions.

Decomposing the 12 initiating structure items results in 7 task management items and 5 monitoring, diagnosing, and action planning items. Furthermore, both dimension descriptions are similar to general conceptions of initiating structure. Similarly, ungrouping the 11 consideration items results in 7 relationship management items and 4 impression management items. Again, both dimension definitions are similar to common conceptions of consideration. Although one proposed dimension (context management) was completely lost based on the sorting done by judges, the elimination of this dimension was not peculiar because it had only 8 items in the original 101-item measure and subsequent CFA and item analyses during measure refinement indicated its deletion as well (see Appendix G).

Scientific Implications

In response to group researchers' call to develop instruments that measure variables central to group processes (Bednar & Kaul, 1994; Kaul & Bednar, 1986), the

present study sought to contribute to extant literature and leadership theory by exploring the factor structure, psychometric properties, and replicability of a leadership self-efficacy measure specifically designed for use within a small group context. It outlines how important a well-defined, comprehensive taxonomy of small group leadership self-efficacy embedded in the broader social cognitive framework (Bandura, 2012) and LMX theory (Graen & Uhl-Bien, 1995) could be used to expand our understanding of not only leadership and self-efficacy but also group dynamics.

Although there have been methodological and conceptual critiques of initiating structure and consideration (House & Aditya, 1997; Kerr & Schriesheim, 1974; Korman, 1966; Northouse, 1997; Rush, Thomas, & Lord, 1977; Yukl, 1998; Yukl & Van Fleet, 1992) that have rendered the factors archaic and “forgotten”, the acceptance of these styles rather than the other proposed models in the present study not only validates the behaviors as central to what leaders do but further supports the results of recent meta-analytic investigations by Judge et al. (2004) and DeRue, Narghang, Wellman, and Humphrey (2011). In their conclusions, Judge et al. (2004) argued that “the denouement for the Ohio State leadership behaviors . . . may be premature” (p. 44) and encouraged researchers to continue investigation of these “forgotten ones.” So, consonant with Judge et al. and DeRue et al., the results of the present study suggest that the abandonment of scholarly interest in initiating structure and consideration may be unwarranted and premature. Indeed, it is noteworthy that the theoretical and conceptual underpinnings of more current theories of leadership such as transformational and transactional leadership (Bass & Avolio, 1993; Burns, 1978; Selter & Bass, 1990) are based on the older

concepts of initiating structure and consideration. Therefore, it is interesting that the findings of the present study identified and confirmed these traditional concepts as the underpinnings of small group leadership self-efficacy.

Another theoretical contribution of this study, as anticipated, is the resultant psychometrically sound measure of small group leadership self-efficacy which potentially has high utility in scientific settings. This measure may provide a considerable degree of information about the small group leadership self-efficacy construct, and the measure may be used by researchers who are interested in further investigating the construct. Because leadership is defined by the context and self-efficacy is task specific, this measure pertains to a criterion domain that is specific to a small group or team. The specificity of the measure to small groups or teams improves on extant global leadership self-efficacy measures by minimizing potential construct contamination and deficiency.

Practical Implications

Because 80% of U.S. organizations have group or team structures in place (cf. Simpson, 1994) and “team leadership is critical to achieving both affective and behaviorally based team outcomes” (Stagl, Salas, & Burke, 2007, p. 172), the small group leadership self-efficacy measure has important practical implications. The results of this study suggests that the small group leadership self-efficacy measure may help to explain individual differences in subsequent success in small group leadership contexts after the assumption of a leadership role. This is consistent with Bandura’s (1997) argument that self-efficacy influences the choices people make and the courses of action

they pursue—individuals tend to choose tasks and activities they believe that they can best perform.

The measure presented here may contribute to the development of more effective leadership selection systems and career planning. Similar to the self-efficacy implications proposed by Gist (1987), the periodic assessment of employee small group leadership self-efficacy perceptions may reveal employees with high self-efficacy for displaying behaviors that lead to effective leadership. Therefore, as team leadership positions become vacant, such individuals may be considered, subsequently resulting in their leadership careers advancement.

The measure may also be used in training as a pre/post-test instrument to assess the effectiveness of leadership training interventions. This is consonant with previous research findings that there are positive posttest differences in self-efficacy for participants who were exposed to various forms of self-management and modeling training (Frayne & Latham, 1987; Gist, 1989; Gist, Schwoerer, & Rosen, 1989). Employees may use the measure to increase awareness of their levels of self-efficacy for performing leadership functions in small groups. This self-awareness may later inform training needs especially when specific leadership problems are traced to low leadership self-efficacy (Gist, 1987).

Borrowing from the basic premise that self-efficacy precedes competent performance (Bandura, 1997), small group leadership development efforts may be enhanced or facilitated by focusing on self-efficacy as a starting point. Indeed, leaders could engage in targeted efficacy-raising exercises to develop in areas where their self-

efficacy is not as strong as desired, or required as indicated by their dimensional profile. This is in accord with the conclusion of previous research that leadership self-efficacy is trainable (Finn, Mason, & Bradley, 2007; Hannah, 2006; Prussia, Anderson, & Manz, 1998) as it was associated not only with increased leader efficacy, but also leadership performance. Furthermore, practitioners could also assess the extent to which one dimension (either initiating structure or consideration) is a better predictor of a criterion of interest than the other.

Limitations and Future Directions for Research

Although the results obtained in the present study are encouraging, it must be acknowledged that there are some associated limitations. Given the restricted nature of the sample used in the present study, the population validity of the results is limited. Future studies will examine whether the findings are generalizable to a broader range of research participants and settings, in particular, leadership settings. The stability of findings across the samples would allow for greater confidence with regard to measurement equivalence and provide an initial indication of the utility of the small group leadership self-efficacy measure. In addition, future research will further evaluate the measure by assessing its comparative validity in small and large group settings, that is, whether the findings of the present study are group size invariant. Therefore, a comparative investigation differentiating between small and large group contexts will be undertaken to examine whether the small group leadership self-efficacy measure can be used to differentially predict leadership role acceptance in a small group, a large group, or both contexts.

Although the present study sought to investigate the criterion-related validity of the measure, the extremely restricted range on the criterion did not permit this. Consequently, future research efforts directed towards establishing empirical relationships between small group leadership self-efficacy and criterion variables (e.g., leadership emergence, leadership role acceptance, and leadership effectiveness) would be germane to further validating the measure. Future research will further examine the construct-related validity of the small group leadership self-efficacy measure which will be reflected in the pattern of relations between scores on the small group leadership self-efficacy measure and scores on measures of the other constructs. Specifically, as previous research has shown, it would be interesting to explore whether small group leadership self-efficacy is positively related to instruments measuring allied constructs, such as locus of control and motivation to lead while demonstrating a negative relationship with Machiavellism (Bobbio & Manganelli, 2009; Chan & Drasgow, 2001; Hannah, 2006; Paglis, 1999; Paglis & Green, 2002).

For a new measure intended for scientific and applied use (i.e., academic, clinical, or personnel applications) to be welcomed into the field, it should explain variance that is not accounted for by well-established measures (Sechrest, 1963). Consequently, future research will examine the incremental validity of the small group leadership self-efficacy measure. A comparative test of the predictive validity of the small group leadership self-efficacy measure against measures that are routinely and readily developed to measure self-efficacy following the principles and guidelines recommended by Bandura (1997; 2006; see Appendix I for an example) and well

established extant leadership self-efficacy measures (Anderson et al., 2008; Paglis & Green, 2002) will determine whether the new measure adds to the prediction of criteria and outcomes above what can be predicted by other sources of data or validated leadership self-efficacy measures (Cronbach & Gleser, 1957).

Conclusion

The present study is the first in a series to present validity evidence for this measure of small group leadership self-efficacy construct. The favorable results reported here are suggestive of a potential for high utility in scientific settings and applied settings and engender future empirical studies as measure development is an iterative process (Smith, 2005). In conclusion, the present study is the first in a program of research that will take up the challenge of better explicating the dimensions, antecedents, correlates, and consequences of the small group leadership self-efficacy construct especially as organizations shift away from traditional hierarchy leadership toward a network of small work teams or groups (Nygren & Levine, 1995).

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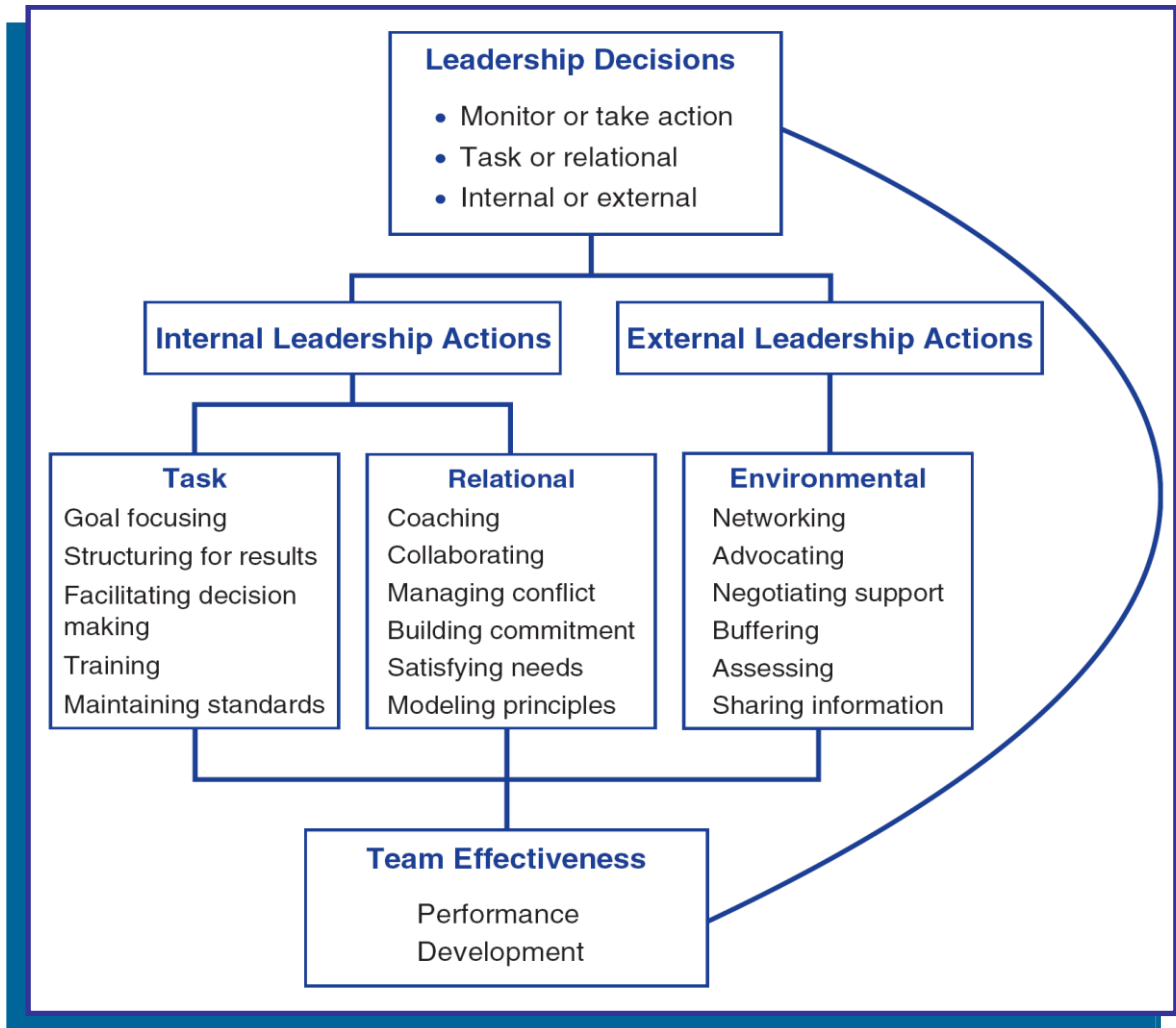
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APPENDIX A

HILL'S MODEL FOR EFFECTIVE TEAM LEADERSHIP



Source: Adapted from Northouse (2013, p. 291).

APPENDIX B

MCGRATH'S CRITICAL LEADERSHIP FUNCTION MODEL

	MONITOR	EXECUTIVE ACTION
INTERNAL	Diagnosing Group Deficiencies 1	Taking Remedial Action 2
EXTERNAL	Forecasting Environmental Changes 3	Preventing Deleterious Changes 4

Source: Adapted from Northouse (2013, p. 293).

APPENDIX C

SMALL GROUP LEADERSHIP SELF-EFFICACY MEASURE

(INITIAL MEASURE)

Instructions: The purpose of this measure is to assess your confidence in your ability to perform certain leadership tasks in small groups. For the purposes of this measure, a small group is defined as either a work, volunteer, or family group. Because it is a personal opinion of yourself, there are no right answers.

Please rate your *confidence* in your capabilities to perform each of the following tasks *as of now*, recording in the blank space provided a number from 1 to 5 using the scale below. Because it is a personal opinion of yourself, there are no right answers. We encourage you to take this seriously, because the information will assist in the development of a measure that will be used in programs designed to help people succeed in important leadership situations.

①
②
③
④
⑤
Not Confident
Moderately
Very
at all
Confident
Confident

Instructions: For the purposes of this measure, a small group is defined as a either a work, volunteer, or family group. Please rate your *confidence* in your capabilities to perform each of the following tasks *as of now*, recording in the blank space provided a number from 1 to 5.

1. Settle conflicts when they occur in your group.	① ② ③ ④ ⑤
2. Make decisions when they are called for.	① ② ③ ④ ⑤
3. Make others feel good to be around you.	① ② ③ ④ ⑤
4. Insist that all group members adopt a collaborative work style in their relationships with one another.	① ② ③ ④ ⑤
5. Attend to the "boring details" of being the group leader.	① ② ③ ④ ⑤
6. Always appear confident and optimistic to group members and others.	① ② ③ ④ ⑤

7. Figure out why your group is not performing well when performance information indicates there is a problem.	① ② ③ ④ ⑤
8. Appear calm in stressful circumstances.	① ② ③ ④ ⑤
9. Help group members learn how to work with each other.	① ② ③ ④ ⑤
10. Develop cooperative relationships with the people in your group.	① ② ③ ④ ⑤
11. Acknowledge mistakes when you make them.	① ② ③ ④ ⑤
12. Appear organized and decisive about what needs to be done.	① ② ③ ④ ⑤
13. Remedy any communication problems in your group.	① ② ③ ④ ⑤
14. Help your group develop effective ways to get the work done.	① ② ③ ④ ⑤
15. Determine situations where a participative group problem solving process would work best.	① ② ③ ④ ⑤
16. Get clear in your own mind what the purpose of your group is.	① ② ③ ④ ⑤
17. Be friendly and approachable.	① ② ③ ④ ⑤
18. Convince group members that the work they are doing is important and worth doing well.	① ② ③ ④ ⑤
19. Anticipate problems and plan for them.	① ② ③ ④ ⑤
20. Assess group members' task-relevant capabilities.	① ② ③ ④ ⑤
21. Challenge others' assumptions regarding the task in a non-threatening way.	① ② ③ ④ ⑤
22. Motivate group members to give their best effort to the group and the task.	① ② ③ ④ ⑤
23. Respond appropriately to the emotional needs of individual group members.	① ② ③ ④ ⑤
24. Inspire enthusiasm for the group's task.	① ② ③ ④ ⑤
25. Show kindness and warmth towards others.	① ② ③ ④ ⑤
26. Effectively handle complex problems.	① ② ③ ④ ⑤
27. Create a network of relationships with people outside of your group who at times could help your group.	① ② ③ ④ ⑤

28. Insist that group members respect each other's opinions and views.	① ② ③ ④ ⑤
29. Assess the strengths and weaknesses of your group.	① ② ③ ④ ⑤
30. Express clearly what you expect from each member of your group.	① ② ③ ④ ⑤
31. Build commitment to the task among members of your group.	① ② ③ ④ ⑤
32. State your group's purpose clearly so that group members understand what they are supposed to accomplish.	① ② ③ ④ ⑤
33. Speak from a strong inner conviction.	① ② ③ ④ ⑤
34. Behave consistently with your stated values.	① ② ③ ④ ⑤
35. Build a sense of togetherness among group members.	① ② ③ ④ ⑤
36. Ask for needed resources from others outside your group, like your boss or peers.	① ② ③ ④ ⑤
37. Evaluate the teamwork skills of your group.	① ② ③ ④ ⑤
38. Follow through on your promises to others.	① ② ③ ④ ⑤
39. Help group members get to know each other on a personal basis.	① ② ③ ④ ⑤
40. Run group meetings efficiently.	① ② ③ ④ ⑤
41. Determine the most critical areas for making improvements in your group's effectiveness.	① ② ③ ④ ⑤
42. Develop a good plan for improving your group's performance, if needed.	① ② ③ ④ ⑤
43. Use humor to relieve tension in your group.	① ② ③ ④ ⑤
44. Build commitment to the group among individual group members.	① ② ③ ④ ⑤
45. Monitor how your group is working together.	① ② ③ ④ ⑤
46. Keep other members of the organization informed about what your group is doing.	① ② ③ ④ ⑤

47. Recognize when conflict in your group is necessary and should be tolerated, and when it is counter-productive and should be ended.	① ② ③ ④ ⑤
48. Keep your group focused on the task.	① ② ③ ④ ⑤
49. Engage in what is commonly referred to as "small talk".	① ② ③ ④ ⑤
50. Recognize and interpret the non-verbal messages of others.	① ② ③ ④ ⑤
51. Encourage group members to share their know-how with one another.	① ② ③ ④ ⑤
53. Being persuasive.	① ② ③ ④ ⑤
54. Establish a system for keeping track of your group's performance.	① ② ③ ④ ⑤
55. Help individual group members develop action plans for improving their performance.	① ② ③ ④ ⑤
56. Give useful advice and coaching to group members who need to improve their performance.	① ② ③ ④ ⑤
57. Take charge when necessary.	① ② ③ ④ ⑤
58. Promote an atmosphere of mutual trust in your group.	① ② ③ ④ ⑤
59. Buffer your group from any unreasonable demands by the organization.	① ② ③ ④ ⑤
60. Publicize the activities of your group within the organization.	① ② ③ ④ ⑤
6. Recognize the emotional needs of individual group members.	① ② ③ ④ ⑤
62. Remember personal information about each person in your group (e.g., birthdays, spouse's name, children's names)	① ② ③ ④ ⑤
63. Act like you know what you are doing even when you are unsure.	① ② ③ ④ ⑤
64. Determine the leadership style you need to engage in to meet the current developmental stage of your group.	① ② ③ ④ ⑤
65. Act as the spokesperson for your group.	① ② ③ ④ ⑤
66. Keep your group constantly focused on its goals.	① ② ③ ④ ⑤

67. Develop ways for keeping track of individual and group performance.	① ② ③ ④ ⑤
68. Act in ways that cause others to like you.	① ② ③ ④ ⑤
69. Gather data and information about your group's performance from outside sources, like your boss or peers.	① ② ③ ④ ⑤
70. Communicate effectively with individual group members.	① ② ③ ④ ⑤
71. Be fair and impartial toward all group members.	① ② ③ ④ ⑤
72. Consistently praise people for a job well done.	① ② ③ ④ ⑤
73. Determine the different stages of development most work groups go through.	① ② ③ ④ ⑤
74. Confront group members whose performance is inadequate.	① ② ③ ④ ⑤
75. Tolerate a moderate level of conflict in your group when necessary.	① ② ③ ④ ⑤
76. Analyze information about your group's performance to determine how things are going.	① ② ③ ④ ⑤
77. Encourage group members to express their own opinions and views.	① ② ③ ④ ⑤
78. Build the confidence of group members.	① ② ③ ④ ⑤
79. Communicate openly and honestly with your group even when it is unpleasant.	① ② ③ ④ ⑤
80. Recognize when your group is not performing well.	① ② ③ ④ ⑤
81. Tell group members what you want them to do.	① ② ③ ④ ⑤
82. Be assertive with group members, peers, and your boss when necessary.	① ② ③ ④ ⑤
83. Help organize your group's decision-making process so that good quality decisions are made.	① ② ③ ④ ⑤
84. Help others feel comfortable being part of the group.	① ② ③ ④ ⑤
85. Follow assignments and plans through to completion.	① ② ③ ④ ⑤

86. Really listen to what group members have to say.	① ② ③ ④ ⑤
87. Be complimentary of others.	① ② ③ ④ ⑤
88. Show sensitivity to the individual needs of group members.	① ② ③ ④ ⑤
89. Talk positively about your group to outsiders.	① ② ③ ④ ⑤
90. Figure out how to help individual members who need assistance.	① ② ③ ④ ⑤
91. Identify the factors that can influence your group's performance.	① ② ③ ④ ⑤
92. Have a clear purpose and set of objectives for each group meeting.	① ② ③ ④ ⑤
93. Monitor the reactions of group members to your behaviors.	① ② ③ ④ ⑤
94. Create an emotionally safe climate for group members to openly discuss any issue related to your group's success.	① ② ③ ④ ⑤
95. Guide a participative group problem solving process.	① ② ③ ④ ⑤
96. Maintaining group harmony.	① ② ③ ④ ⑤
97. Help your group set measurable goals for any project they are assigned to complete.	① ② ③ ④ ⑤
98. Make sure each member feels included in your group.	① ② ③ ④ ⑤
99. Establish credibility with group members.	① ② ③ ④ ⑤
100. Figure out an overall strategy that will help your group accomplish its task.	① ② ③ ④ ⑤
101. Keeping your group on task.	① ② ③ ④ ⑤
102. Set and enforce high standards of performance in your group.	① ② ③ ④ ⑤

Note. The initial measure consisted of only 101 items; however, the last item here is #102 due to the omission of #52.

APPENDIX D

SELF NOMINATION FOR A LEADERSHIP ROLE VIGNETTE

Situation:

Imagine you have already graduated and have been working for three years. Now imagine that your boss has asked you if you would be interested in taking on the task of leading a group of your co-workers who have been assigned to an important, high profile project for the organization. She assures you that you are under no obligation to accept this leadership assignment, and your prior experience with her tells you that she means what she says. Furthermore, she tells you that if you decide to take this assignment you will be relieved of some of your current duties to offset the demands of the new project.

From her description of the project, you realize that you understand the technical issues involved, so you have the necessary know-how. In addition, you already know some of the people who have been selected to participate in the project as group members.

Finally, your boss tells you that your performance as the group leader will be considered as part of your annual performance review. Given these circumstances, would you accept this leadership position?

Yes _____ No _____

Rationale:

In the space provided, please offer an explanation regarding your decision. Be as detailed as you can, explaining the rationale for your decision. Again, this information is anonymous, so feel free to be candid in your responses.

APPENDIX E

PREVIOUS LEADERSHIP EXPERIENCE, TRAINING, AND EDUCATION

Age: _____

Sex: Male _____ Female _____

a. Previous Experiences

Consider leadership to be something that occurs whenever one person takes personal responsibility for another person's (or group of people's) performance and well-being. Thus, if you mentor someone to help them read better or develop good habits, you are enacting leadership and taking on a leadership role. If you direct a study group, organize a fundraising project, or tutor a classmate, you have assumed a leadership role. Any situation in which you act to influence the thoughts, feelings, or behaviors of another person or a group of people to accomplish valued individual or group goals, you are taking on a leadership role.

Given the above description of leadership, what leadership experiences have you had since you were a high school sophomore? In the space provided below briefly describe each experience. Please make sure you speak to the following: (a) What was the purpose of the group or the activity? (b) What was your role? (c) What was the outcome? (d) Was it a positive or negative experience?

Please begin with your most recent leadership experience and go back as far as the beginning of your sophomore year of high school. Remember, here leadership experiences can include formal work groups (whether in a business or military setting) or volunteer groups (like church, clubs, service groups, college activities, etc) or even a family group (like organizing a family reunion). Try to list the most influential experiences on the first few lines if you notice you may run out of space. However, you are not required to use all the spaces provided.

1. _____
Positive _____ Negative _____

2. _____
Positive _____ Negative _____

3. _____
Positive _____ Negative _____

4. _____
Positive _____ Negative _____

5. _____
Positive _____ Negative _____

b. Previous Leadership Education and Training

The purpose of this section is to determine the amount of formal leadership education and training you have had up to the present time. Leadership education and training is defined here as any formal event or activity that was designed to enhance your leadership capabilities. Examples include college courses like ALED 340 Professional Leadership Development, seminars sponsored by Student Activities or the Corps of Cadets, and self-study (like reading a book on leadership).

Begin with your most recent leadership training experience and go back as far as your sophomore year in high school. List and briefly describe any leadership education and training events you have had including whether it was a positive or negative experience. Try to list the most influential experiences on the first few lines if you notice you may run out of space. However, you are not required to use all the spaces provided.

1. _____
Positive _____ Negative _____

2. _____
Positive _____ Negative _____

3. _____
Positive _____ Negative _____

4. _____
Positive _____ Negative _____

5. _____
Positive _____ Negative _____

APPENDIX G

101-ITEM SMALL GROUP LEADERSHIP SELF-EFFICACY MEASURE ITEM ANALYSES

#	Description	Loading	α -if-del.	ITC	α
	<u>Context management</u>				.81
60	Publicize the activities of your group within the organization.	.68	.78	.61	
69	Gather data and information about your group's performance from outside sources, like your boss or peers.	.66	.78	.58	
27	Create a network of relationships with people outside of your group who at times could help your group.	.64	.79	.57	
59	Buffer your group from any unreasonable demands by the organization.	.63	.79	.57	
65	Act as the spokesperson for your group.	.59	.79	.51	
36	Ask for needed resources from others outside your group, like your boss or peers.	.58	.79	.52	
46	Keep other members of the organization informed about what your group is doing.	.56	.80	.51	
89	Talk positively about your group to outsiders.	.40	.82	.36	
	<u>Impression management</u>				.86
68	Act in ways that cause others to like you.	.67	.86	.60	
6	Always appear confident and optimistic to group members and others.	.65	.85	.60	
17	Be friendly and approachable.	.65	.85	.56	
25	Show kindness and warmth towards others.	.61	.85	.52	
3	Make others feel good to be around you.	.60	.86	.51	
87	Be complimentary of others.	.59	.86	.53	

#	Description	Loading	α -if-del.	ITC	α
99	Establish credibility with group members.	.56	.85	.54	
33	Speak from a strong inner conviction.	.53	.86	.50	
49	Engage in what is commonly referred to as "small talk".	.52	.85	.48	
53	Being persuasive.	.51	.86	.50	
57	Take charge when necessary.	.49	.86	.49	
63	Act like you know what you are doing even when you are unsure.	.47	.86	.46	
50	Recognize and interpret the non-verbal messages of others.	.44	.86	.43	
38	Follow through on your promises to others.	.43	.86	.42	
12	Appear organized and decisive about what needs to be done.	.42	.86	.40	
34	Behave consistently with your stated values.	.40	.86	.40	
62	Remember personal information about each person in your group (e.g., birthdays, spouses' names, children's names)	.36	.86	.34	
8	Appear calm in stressful circumstances.	.35	.86	.34	
11	Acknowledge mistakes when you make them.	.23	.87	.22	
	<u>Monitoring, diagnosing, and action planning</u>				.93
76	Analyze information about your group's performance to determine how things are going.	.75	.92	.73	
42	Develop a good plan for improving your group's performance, if needed.	.71	.92	.67	
91	Identify the factors that can influence your group's performance.	.70	.92	.68	
64	Determine the leadership style you need to engage in to meet the current developmental stage of your group.	.70	.92	.68	
41	Determine the most critical areas for making improvements in your group's effectiveness.	.69	.92	.66	

#	Description	Loading	α -if-del.	ITC	α
45	Monitor how your group is working together.	.68	.92	.66	
100	Figure out an overall strategy that will help your group accomplish its task.	.68	.92	.65	
67	Develop ways for keeping track of individual and group performance.	.65	.93	.61	
29	Assess the strengths and weaknesses of your group.	.63	.93	.61	
73	Identify the different stages of development most work groups go through.	.63	.93	.60	
37	Evaluate the teamwork skills of your group.	.61	.93	.59	
19	Anticipate problems and plan for them.	.61	.93	.59	
15	Determine situations where a participative group problem solving process would work best.	.60	.93	.58	
7	Figure out why your group is not performing well when performance information indicates there is a problem.	.60	.93	.58	
20	Assess group members' task-relevant capabilities.	.59	.93	.57	
47	Recognize when conflict in your group is necessary and should be tolerated, and when it is counter-productive and should be ended.	.58	.93	.56	
80	Recognize when your group is not performing well.	.56	.93	.54	
93	Monitor the reactions of group members' to your behaviors.	.55	.93	.53	
90	Figure out how to help your group member improve his or her performance.	.51	.93	.50	
16	Get clear in your own mind what the purpose of your group is.	.48	.93	.46	
61	Recognize the emotional needs of individual group members.	.47	.93	.46	
	<u>Relationship management</u>				.93
84	Help others feel comfortable being part of your group.	.76	.93	.72	
70	Communicate effectively with individual group members.	.72	.93	.69	
58	Promote an atmosphere of mutual trust in your group.	.72	.93	.68	

#	Description	Loading	α -if-del.	ITC	α
98	Make sure each member feels included in your group.	.71	.93	.67	
35	Build a sense of togetherness among group members.	.70	.93	.67	
78	Build the confidence of group members.	.69	.93	.66	
96	Maintaining group harmony.	.68	.93	.65	
94	Create an emotionally safe climate for group members to openly discuss any issue related to your group's success.	.66	.93	.63	
44	Build commitment to your group among individual group members.	.64	.93	.63	
77	Encourage group members to express their own opinions and views.	.64	.93	.62	
88	Show sensitivity to the individual needs of group members.	.63	.93	.59	
86	Really listen to what group members have to say.	.62	.93	.58	
39	Help group members get to know each other on a personal basis.	.59	.93	.57	
72	Consistently praise people for a job well done.	.59	.93	.56	
13	Remedy any communication problems in your group.	.58	.93	.58	
23	Respond appropriately to the emotional needs of individual group members.	.58	.93	.55	
9	Help group members learn how to work with each other.	.57	.93	.56	
10	Develop cooperative relationships with the people in your group.	.56	.93	.55	
1	Settle conflicts when they occur in your group.	.54	.93	.54	
51	Encourage group members to share their know-how with one another.	.54	.93	.53	
28	Insist that group members respect each other's opinions and views.	.53	.93	.52	
79	Communicate openly and honestly with your group even when it is unpleasant.	.51	.93	.50	
71	Be fair and impartial toward all group members.	.50	.93	.49	

#	Description	Loading	α -if-del.	ITC	α
4	Insist that all group members adopt a collaborative work style in their relationships with one another.	.40	.93	.40	
43	Use humor to relieve tension in your group.	.40	.93	.39	
75	Tolerate a moderate level of conflict in your group when necessary.	.38	.93	.39	
	Task management				.94
83	Help organize your group's decision-making process so that good quality decisions are made.	.74	.94	.72	
97	Help your group set measurable goals for any project they are assigned to complete.	.70	.94	.68	
102	Set and enforce high standards of performance in your group.	.67	.94	.65	
40	Run group meetings efficiently.	.67	.94	.65	
92	Have a clear purpose and set of objectives for each group meeting.	.67	.94	.64	
66	Keep your group constantly focused on its's goals.	.66	.94	.64	
30	Express clearly what you expect from each member of your group.	.65	.94	.63	
32	State your group's purpose clearly so that group members understand what they are supposed to accomplish.	.65	.94	.63	
82	Be assertive with group members, peers, and your boss when necessary.	.65	.94	.62	
95	Guide a participative group problem solving process.	.64	.94	.61	
56	Give useful advice and coaching to group members who need to improve their performance.	.64	.94	.61	
2	Make decisions when they are called for.	.62	.94	.61	
26	Effectively handle complex problems.	.63	.94	.61	
81	Tell group members what you want them to do.	.63	.94	.61	
31	Build commitment to the task among members of your group.	.61	.94	.59	
48	Keep your group focused on the task.	.59	.94	.57	
21	Challenge others' assumptions regarding the task in a non-threatening way.	.58	.94	.57	

#	Description	Loading	α -if-del.	ITC	α
54	Establish a system for keeping track of your group's performance.	.58	.94	.56	
14	Help your group develop effective ways to get the work done.	.58	.94	.56	
101	Keeping your group on task.	.57	.94	.55	
74	Confront group members whose performance is inadequate.	.55	.94	.52	
55	Help individual group members develop action plans for improving their performance.	.53	.94	.61	
18	Convince group members that the work they are doing is important and worth doing well.	.53	.94	.53	
85	Follow assignments and plans through to completion.	.53	.94	.51	
24	Inspire enthusiasm for your group's task.	.52	.94	.51	
22	Motivate group members to give their best effort to your group and the task.	.51	.94	.50	
5	Attend to the "boring details" of being your group leader.	.41	.94	.40	

Note. $n = 334$. ITC = item total correlation; α -if-del = alpha-if-deleted. Items in boldface are the 32-items refined in Study 1. Bolded items in a dark background are the final 23-item measure.

APPENDIX H

FINAL 23-ITEM SMALL GROUP LEADERSHIP SELF-EFFICACY MEASURE

#	Item Description	α
	<p><u>Initiating Structure</u></p> <ol style="list-style-type: none"> 1. Express clearly what you expect from each member of your group. 2. Run group meetings efficiently. 3. Help individual group members develop action plans for improving their performance. 4. Help organize your group's decision-making process so that good quality decisions are made. 5. Have a clear purpose and set of objectives for each group meeting. 6. Help your group set measurable goals for any project they are assigned to complete. 7. Set and enforce high standards of performance in your group. 8. Determine the most critical areas for making improvements in your group's effectiveness. 9. Develop a good plan for improving your group's performance, if needed. 10. Develop ways for keeping track of individual and group performance. 11. Analyze information about your group's performance to determine how things are going. 12. Figure out an overall strategy that will help your group accomplish its task. 	.92
	<p><u>Consideration</u></p> <ol style="list-style-type: none"> 13. Build a sense of togetherness among group members. 14. Promote an atmosphere of mutual trust in your group. 15. Build the confidence of group members. 16. Help others feel comfortable being part of your group. 17. Create an emotionally safe climate for group members to openly discuss any issue related to your group's success. 18. Maintaining group harmony. 19. Make sure each member feels included in your group. 20. Make others feel good to be around you. 21. Be friendly and approachable. 22. Show kindness and warmth towards others. 23. Act in ways that cause others to like you. 	.91

Note. $N = 864$. Item numbers are not as they appear in the original measure. Overall measure Cronbach alpha = .93.

APPENDIX I

AN EXAMPLE OF A SELF-EFFICACY MEASURE

Please read each of the statements listed below and mark the response that best indicates the extent to which you agree with each statement:

- | | | | | |
|------------------------------|-----------------|---------------------------------------|--------------|---------------------------|
| ① | ② | ③ | ④ | ⑤ |
| Strongly
Disagree | Disagree | Neither Agree
nor Disagree | Agree | Strongly
Agree |

1. I feel confident in my ability to perform effectively as a small group leader.	① ② ③ ④ ⑤
2. I can facilitate the accomplishment of group goals.	① ② ③ ④ ⑤
3. I feel confident in my ability to appear as a confident and competent leader to group members.	① ② ③ ④ ⑤
4. I can foster close interpersonal relationship and harmony within the group.	① ② ③ ④ ⑤
5. I feel confident in my ability to promote the group in its embedded environment and prevent it from unnecessary demands.	① ② ③ ④ ⑤
6. I can identify problems within the group and act accordingly.	① ② ③ ④ ⑤